

VADE MECUM OF MEDICAL TREATMENT

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PREFACE TO FIRST EDITION

My object in writing this book has been to provide in a convenient form and handy size an account of the treatment of those diseases most commonly met in general medical practice. The conditions dealt with are arranged alphabetically to facilitate ready reference, although in a few instances it has been considered preferable to group together the diseases of one organ (e.g. the heart, ear and eye). In order, however, that no confusion may occur the subjects have, in addition, been fully indexed at the end.

The aim of all treatment is to assist Nature to overcome and cure disease and, when this is not possible, to devise some means of alleviating the patient's symptoms. To these ends the whole armamentarium of Science has, at some time or other, been employed with varying success. Many procedures are not conveniently available in everyday practice, others, though spectacular and impressive in execution, are unproven in their effects.

It is quite clear that a case may be approached from various angles, and that corresponding lines of treatment may be adopted. Alternative therapeutic procedures have therefore been given, but the individual practitioner must select which he considers most appropriate for the occasion.

In some instances treatment which the general practitioner can hardly be expected to perform has been included. This has been done not only for completeness, but also as an indication of the therapeutic measures which may be carried out for the benefit of the patient in hospital or by the specialist. In this connection the details given should be useful to a hospital resident or senior student.

That accurate diagnosis must take precedence over treat-

ment is evident. For this reason occasional reference has been made to methods and points of diagnostic importance when it has been considered that they will be useful. On the other hand, it is often possible to obtain relief from symptoms, which is what the patient most desires, before the true nature of the disease becomes apparent. The importance of this must be recognized because occasionally the life of a patient may be lost by delaying therapeutic measures while special investigations are being carried out, instead of acting immediately on a clinical diagnosis.

During a number of years of hospital experience many conditions have been treated so that, wherever possible, those methods which have been tried personally have been included. In other instances, information has been taken from or compared with recent literature and the standard works of recognized authorities, in the endeavour to make the book as comprehensive, up to date and reliable as possible.

The time when *Materna Medica* was confined to the drugs of the *Pharmacopœia* has passed, and there are now so many efficient proprietary preparations on the market that it has been a matter of great difficulty to know which to include. As a rule, only those which are generally recognized or which I have used myself, or have been recommended by my colleagues, have been mentioned. While many such preparations are placed before the practitioner by the advertisements of commercial firms, not all have stood the test of time and some, after an initial period of enthusiasm, have been shown to be scientifically unjustifiable or even dangerous. This is not said in condemnation of all these products but as a warning that newly introduced remedies should be employed with caution and discretion and that until proof is obtained or well authenticated and controlled records appear in medical literature, the manufacturer's claims should be accepted with discrimination.

The wise physician will always cling to well tried and trusted remedies, it is only when these are inadequate

or fall short of expectations that he should forsake them for more or less experimental procedures

One aspect of treatment which cannot be dealt with in a book of this type, but which is of paramount importance, is the estimation of the physio psychological make up of the individual patient. This as well as his dietetic and endocrine idiosyncrasies, must always be considered in case management

I make no apology for introducing a few sections which do not belong strictly to the realm of general medicine such as those on common affections of the ear and eye because I feel that their inclusion will add to the usefulness of the book

I would like to express my thanks to my publishers for their assistance and courtesy and to add that any suggestions whereby the utility of the book may be increased will be greatly appreciated

W GORDON SEARS

I am grateful to The Medical Officer of Health to the London County Council for his permission to publish this book and I have to state that the L.C.C. is in no way committed to the views expressed

PREFACE TO FOURTH EDITION

In the Preface to the first edition it was stated that the object of this book was to provide in convenient form and handy size an account of the treatment of the more common medical conditions. The policy followed since the original publication has been to keep the work as up to date as possible, but the necessity for a new edition within two years has not involved any major changes in the material or general plan of the book. A few sections, e.g. Impetigo, Scabies and Whooping Cough, have been largely re-written and a considerable number of minor alterations have been made.

Because of the shortage of many drugs and the rationing of foodstuffs, the war has raised a very difficult problem in the revision of a book of this kind. However, in view of the facts—(i) that full directions have been given elsewhere to the medical profession concerning drugs in the use of which strictest economy is necessary and that these may vary from time to time, (ii) that in many instances local stocks may be available, (iii) that the work has a considerable circulation in the Dominions and Colonies which may be unaffected by the same restrictions—it has been decided not to make any material alterations in the text on this basis.

The fact that the book is used not only by practitioners but also by house officers and senior students, makes it a little difficult to know how much to dogmatise. The former, by reason of experience will be able to decide which of various therapeutic procedures available are most suited to individual cases under their care. The latter must gain that experience which can never be acquired from the pages of a book. I have, however,

endeavoured to indicate the relative value of certain measures by the varied use of such words as "should" or "may"

Once again I would like to express my special thanks to Mr J Rawlings Elhott, Ph C, M P S, D B A, Pharmacist, Mile End Hospital, for suggestions and for his very valuable assistance in checking the pharmaceutical details and in proof reading

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ACHALASIA OF THE CARDIA (Cardiospasm)

This condition may be suspected (1) when the patient complains of food sticking below the lower end of the sternum, (2) there is regurgitation of alkaline undigested food and (3) loss of weight. It may be distinguished from carcinoma of the cardia by the X ray appearances and the absence of occult blood from the stools. (N B —The condition may occur in quite young children who may also be treated by the mercury bougie.)

The MEDICAL TREATMENT consists of teaching the patient to swallow a mercury bougie before meals, the largest size which the patient can tolerate giving the most rapid results (gauge 24 to 32). At first the bougie should be retained for 15 minutes. The frequency may later be reduced to twice daily and then in the morning only. The time may also be gradually shortened to 5 minutes.

In severe cases, marked œsophagitis may be present and 3-4 pints of milk, together with eggs and glucose should be given daily (four feeds) during the first week of treatment. Later the diet may be increased, but at all times pips and fruit skins, which are liable to be retained, should be avoided.

The patient should conclude each meal with a glass of water.

SURGICAL MEASURES may be tried if medical treatment fails, especially in cases in which the œsophagus is kinked owing to excessive elongation associated with marked dilatation.

1 Division of the muscle of the cardiac sphincter in a manner similar to Rammstedt's operation for pyloric stenosis.

2 Retrograde digital dilatation of the orifice after gastrotomy.

ACNE VULGARIS

Treatment is directed to emptying the follicles. In mild cases this may be done by frequent washing with spirit soap and hot water or a comedon extractor may be employed to express the contents of the follicles after steaming the face. This should be followed by the application of a lotion such as Calamine lotion containing 2% Potass Sulphurata or

R. Sulph. Præcip t	dr 1
Calaminæ Præp	dr 3
Zinci Oxide	dr 2
Glycerini	dr 2
Aquam vel. Aq Rosæ	ad 4 oz

Ointments on account of the greasy character of the skin should be avoided.

In chronic cases the application of a strong Resorcin paste (see page 304) may be beneficial by producing a superficial exfoliation.

Pustules may be ruptured by the point of a fine scalpel or a pointed match stick which has been dipped in Tincture of Iodine.

X rays are useful in stubborn cases while some benefit by ultra violet light. Vaccines are also worth a trial especially when deep or pustular lesions are present but should always contain the acne bacillus in addition to staphylococci.

Internal remedies which may be beneficial include Calcium Sulphide $\frac{1}{2}$ grain in pill form and preparations of Yeast.

There is no evidence that a high carbohydrate diet is harmful.

ACTINOMYCOSIS

1 Evidence is accumulating that Sulphanilamide and Sulphapyridine are the most useful drugs to employ especially in abdominal lesions. Two or three courses at intervals of a week have been employed. The total amount of the drug given in each course varies between 20 and 40 grams.

2 Apart from the Sulphonamides, the most useful drugs are Potassium Iodide or Iodine in some other form, which must be given in large doses

(a) Potassium Iodide increased up to 100 or 150 grains, or even 250 grains daily

(b) French Tincture of Iodine in milk commencing with m 5 and increased to m 30 three times a day

3 Thymol, 10 grains every other day by mouth, combined with packing wounds and sinuses with a 20% solution in Olive Oil has been recommended

4 X ray therapy or Radium is useful for softening hard masses of inflammatory tissue, thereby aiding Iodine therapy

5 Vaccines may be employed in indolent cases commencing with 1 million organisms of a stock actinomycosis vaccine and increasing at weekly or bi weekly intervals up to 100 million

6 Surgical excision of indurated areas, scraping of sinuses and removal of sequestra may be necessary, depending upon the situation of the lesion

ADDISON'S DISEASE

Until recently Cortical Extract was relied on for the treatment of this condition. Now, in addition, the synthetic product Desoxycorticosterone and Sodium Chloride both play their part. Expense is an important factor in the use of Cortical Extract but the synthetic product and salt both help to reduce the cost.

Various phases of the disease are encountered —

1 CRISIS All such cases require

(a) Cortical Extract or Cortical Extract with Desoxycorticosterone

(b) Sodium Chloride (restricted if oedema develops and not used with Desoxycorticosterone)

(c) Glucose and fluids

In severe crises, 10 to 20 c c of Cortical Extract should be given intramuscularly every four hours during the first day. The immediate intravenous injection of 50 c c of extract with a pint of normal saline has been advised but may be followed by an allergic reaction.

On account of the dehydration present, fluids with Glucose should be pushed by mouth and intravenous or rectal salines given if required. Injections of Adrenalin (1 in 1000), 1 to 2 c c, are also useful in this stage.

The dosage of Cortical Extract can subsequently be reduced to 20 c c, and later to 10 c c daily, by intramuscular injection. These doses can be reduced still further if combined with suitable amounts of Desoxy corticosterone. (NB—If the injection is painful 2 c c of 2% Procaine (Novocaine) may be mixed with the extract.)

2 MAINTENANCE

(i) *Mild cases* It has been found that large doses of common salt are of value, and it may be possible to maintain a few patients in a fair state of health with this alone. 20 grams should be given daily. This may be taken in capsules or in Bovril and with meals. If Sodium Chloride is not tolerated, a mixture of Sodium salts may be employed, e g

R. Sodii Bicarb }	
Sodii Acetat }	aa grams 3
Sodii Citrat }	
Sodii Chlorid }	grams 5
Syrup Aurant }	dr 1
Aq ad 1 oz	

(ii) *Moderate cases* These can be maintained by the use of Desoxycorticosterone, which may be given either by intramuscular injection (dose varying between 5 to 10 mgm daily at the beginning of treatment to 5 to 15 mgm weekly for maintenance), or by pellets (50-150 mgm) implanted subcutaneously.

(m) *Severe cases* Desoxycorticosterone must be supplemented by doses of Cortical Extract

The progress of the case must be watched by the blood pressure and by periodic estimations of the blood urea which usually rises if the patient is going downhill. The actual dose of Extract or synthetic product required must be carefully established for each case and adjusted according to progress.

Purgation should be avoided as the disturbance of fluid equilibrium may precipitate a crisis. Severe oedema due to excessive salt administration may call for salt restriction and if serious the elimination of sodium may be hastened by giving Potassium salts. (Suitable Cortical Extracts include Encortone Cortin Eschartin.)

ÆROPHAGY

This is the commonest form of gastric flatulence. Explain the mechanism of air swallowing to the patient and instruct him to refrain from voluntary eructation. Any associated dyspepsia should receive attention. As a temporary measure hot-water may be sipped slowly or a few drops of Oil of Peppermint given on a piece of sugar. The following is useful:

R. Soda B carb	gr 10
Tinct Zinzberis	m 15 to 30
Tinct Card Co	m 30
Aq Menth Pip	ad 1 oz

AGRANULOCYTOSIS

The diagnosis is made on the clinical findings generally an ulcerative pharyngitis and stomatitis together with marked leucopenia and agranulocytosis.

1 All possible causes of the condition must be eliminated e.g. drugs especially those of the Pyrimidon group Phenacetin gold salts Arsphenamine and drugs of the Sulphonamide type. Under no circumstances may these be employed during the treatment of the condition.

2 *Local treatment* Gargles or throat sprays may be

used For the latter, a saturated solution of Potassium Chloride has been recommended which may be followed by swabbing with Copper Sulphate solution 10 grains to 1 oz

3 Hypo chromic anemia should be treated with large doses of Iron Hyper chromic anæmia by injections of Liver Extract Blood transfusion is worth a trial in desperate cases

4 The only drug which has so far been found to have any marked effect in this condition is Pentose Nucleotide (Pentnucleotide Pentine Pentide) This is by no means always successful but in view of the serious nature of the disease should always be given Intramuscular injections of Pentose Nucleotide should be given e.g. 10 c.c. three times a day or 15 c.c. twice daily for several days These injections may be painful but this can be avoided by injecting 2 c.c. of Novocain (1%) into the muscle and then attaching to the needle the syringe containing the Nucleotide

5 Occasionally cases respond to stimulating (minimum) doses of X rays applied to the long bones

6 Hepatex T has been suggested for chronic cases

ALOPECIA AREATA

1 Any focus of infection should be eradicated

2 In the early stages when the hair is falling out the following may be applied twice daily

R Sulph Præc p	gr 5
Acid Salicyl	gr 5
Adeps Benzo natl	ad 1 oz

Misce ft ungt

3 When the hair has ceased to fall out a mild irritant may be used

R Acid Lactici	dr 4
Ol Pic m	dr 3
Spt Vin Meth	ad 6 oz

Misce ft lotio

4 Daily applications of Liq Epispasticiens will sometimes start the growth of hair in obstinate cases

5 Local applications of ultra violet light are also useful

6 If too much local irritation be produced the following lotion may be applied until the reaction has subsided —

R* Lq Carbonis Detergentis	dr 2
Lq Plumbi Subacetat	dr 2
Glycerini	dr 2
Aquam	ad 6 oz.

* Or Lq Pcis Carb Meth.

7 The following is a useful stimulating lotion for *pre-mature baldness*

R Resorcin	gr 5
Lq Cantharidin	m 20
Hydrarg Perchlor	gr $\frac{1}{2}$
Paraffin Lq	dr 2
Spt, Vini Meth	oz. $\frac{1}{2}$
Aq Rosæ	ad 1 oz

Misce ft. lotio

ANÆMIA

Anæmia may be classified in the following way and for purposes of treatment it is necessary to discover the type present Blood counts are therefore essential

1 Anæmia due to Hæmorrhage

- (a) Recent severe loss of blood
- (b) Repeated loss of smaller quantities (e.g. piles menorrhagia)

2 Anæmia due to Deficient Blood Formation

- (a) Hypo-chromic microcytic type with low colour index (simple achlorhydric anæmia chlorosis anæmia due to malnutrition)
- (b) Hyper-chromic macrocytic type with high colour index (pernicious anæmia sprue etc)

3 Anæmia due to Excessive Blood Destruction (Hæmolytic)

1 Anæmia due to Hæmorrhage

- (a) Recent Severe Loss (e.g. injury hæmatemesis severe melæna post partum hæmorrhage)

- 1 Treat the cause and arrest the bleeding

- 2 Raise the foot of the bed at least a foot in order to keep the head low and reduce cerebral anæmia

3 Give copious fluids by mouth unless contra-indicated, also normal saline per rectum or intravenously according to the severity of the case. Subcutaneous or intra peritoneal saline may be given to infants.

4 Prepare for (grouping etc.) and give blood or plasma transfusion without delay when indicated.

5 In most cases any residual anæmia responds well to full doses of Iron and should be treated thus.

N B—A pint of blood may be lost rapidly by the healthy adult without producing symptoms, the loss of 2 pints is serious, if the amount exceeds 4 pints the result is often fatal and only a prompt transfusion can hope to save the patient.

Treatment of the shock due to severe hæmorrhage requires the transfusion of 500 c.c. of blood followed by 100 c.c. per hour until the hæmoglobin has risen to 70%.

In shock, without hæmorrhage, the transfusion of $\frac{1}{2}$ to 2 pints of plasma is indicated, because there is no deficiency in the oxygen carrying power of the blood.

(b) Repeated Loss of Smaller Amounts

1 Treat the cause

2 Give full doses of Iron (*N B*—(1) Iron should always be taken directly after meals. (2) The optimum dosage of iron is higher in patients with achlorhydria than those with normal gastric secretion.)

(a) R. Ferri et Ammon. Cit.

gr 30

Aq. Menth. Pip. vel Chlorof.

ad $\frac{1}{2}$ oz t.d.s.

or (b) Bland's Pill

gr 30 to 40 t.d.s.

or (c) Ferrous Sulphate

gr 3 to 5 t.d.s.

Soluble ferrous salts act in a smaller dosage and in a shorter time than the other preparations. They are easy to administer in tablet form.

Most unofficial preparations given by injection, e.g. colloidal iron, iron cacodylate and ferruginous serum contain infinitesimal amounts of iron and are practically useless.

3 If progress is delayed a short course of Laver therapy may be tried but is not usually indicated.

4 If the anæmia is severe and Iron is not tolerated by mouth, give blood transfusion.

N B—The cure of a severe anæmia by iron may take 3 to 4 months and the improvement during the first month is often slow

2 Anæmia due to Deficient Blood Formation

(a) *Hypo chromic microcytic type* (simple achlorhydric anæmia chlorosis also in nephritis chronic infective processes malnutrition and carcinoma)

Being due to iron deficiency the treatment is the same as that just given with the exception that liver therapy is not indicated

When the blood has returned to normal a maintenance dose of Iron should be continued indefinitely i.e. Ferri et Ammon Cit 20 grains Blaud's Pill 10 grains or Ferrous Sulphate 3 to 5 grains three times a day

The bowels should receive attention especially in chlorosis Achlorhydria requires no treatment unless associated with diarrhoea or gastric symptoms which may be relieved by

R. Acid Hydrochlor Dil	dr 1
taken as a draught in 5 oz of water three times a day before meals and flavoured with orange juice if desired	
or R. Acid. Hydrochlor Dil	m 30
Glycer Pepain	dr 1
Tinct Capsici	m 3
Tinct Nucis Vom	m 10
Aq ad 1 oz t.d.s. a.c.	

Adequate ventilation fresh air and sunshine are essential The diet should be nutritious and contain a sufficient amount of milk green vegetables salad and fruit

N B—Excess of acid fruit such as lemons apples and oranges should be avoided since certain acids are said to interfere with iron absorption

PERNICIOUS ANÆMIA (*Addison's anæmia*)

(b) *Hyper chromic macrocytic type* (which occurs also in sprue tropical anæmia and idiopathic steatorrhœa)

Management is divided into (a) treatment stage
(b) maintenance stage

Throughout the whole course of the disease it is essential

to control the treatment by blood-counts at regular intervals. The diagnosis should be confirmed by proving the presence of macrocytic hyper-chromic anæmia, the occasional presence of nucleated red cells etc. achylia gastrica and a positive indirect van den Berg reaction in the blood. Carcinoma of the stomach should be excluded by X ray and testing the stools for occult blood by the benzidine test when necessary.

In the majority of cases it is wise for the patient to rest in bed during the initial period of treatment.

Injection Treatment Undoubtedly the most efficient, quickest and cheapest form of therapy is the intramuscular injection of a potent liver extract (e.g. Campolon, Hepatex, Hepastab, Pernæmon). Weekly injections of 8 to 10 c.c. of one of these preparations should be given until a count of 5 million R.B.C. and 90% Hgb is obtained.

It cannot be too strongly emphasized that the aim in every case must be to reach and maintain this standard. A blood count allowed to remain in the neighbourhood of 4 million red cells does not obviate the danger of subacute combined degeneration of the cord.

Two or three injections may be given during the first week in very severe cases.

The maintenance dose must then be established and controlled by blood-counts at intervals of a month in the first place; later the interval may be increased to once in 3 months. The depot dosage system has proved satisfactory. In the average case 10 c.c. of Campolon or the equivalent dose of one of the other preparations every 3 to 4 weeks should be adequate.

There is no reason why an intelligent patient should not be taught to give this himself provided it is emphasized (1) that the injection must be given deeply into the muscle either of the gluteal region or outer side of the thigh, (2) that the site is well massaged afterwards and (3) that blood-counts must be carried out from time to time at regular intervals.

Since blood regeneration is very rapid, iron deficiency may occur. 60 to 90 grains of Iron and Ammonium Citrate, Ferrons Sulphate 15 grains or Bland's Pill 30

grains, should be given daily during the treatment stage, especially if the colour index falls below unity

With this method, blood transfusion is rarely employed and is sometimes dangerous when the red cells are in the region of one million

More concentrated liver fractions of proved activity are also available, e.g. Anahæmin (B.D.H.) which have the advantage that smaller doses are required, e.g. Depot Dosage = 2 c.c. every 3 to 4 weeks

In rare instances sensitivity to liver extract may be encountered. The immediate treatment of collapse is the injection of Adrenalin. Subsequently, attempts at desensitisation should be made by injecting $\frac{1}{16}$ of the usual dose and double this amount twenty minutes later. The remainder of the dose should follow in an hour

Oral Therapy The following agents may be employed (a) raw or lightly cooked liver, (b) liver extract in liquid or tablet form (expensive), (c) desiccated hog's stomach.

While any of these methods may prove efficient there are certain drawbacks, viz. (1) patients often get tired of liver and it is frequently over-cooked, (2) some of the prepared extracts vary in potency

Their greatest value is in maintenance when patients are averse to injections or if it is desired to reduce the dose and frequency of maintenance injections

The injection of a concentrated liver fraction is the most economical method of treatment. If the case is carefully watched the maintenance depot dose may sometimes be extended to 5 c.c. every 8 weeks

HOG'S STOMACH This may be taken in cold milk sprinkled over cereals of the cornflake variety, with milk and sugar and if a reliable preparation is employed is the most efficient and cheapest form of oral therapy (e.g. Pepsac, Ventriculin, Gastrexo, which are thermolabile and must not be heated)

Treatment dose = 30 grams (1 oz., 2 to 3 tablespoonfuls), daily

Maintenance dose = 10 grams daily, unless cord changes are present, when the full dose should be continued

The potency of any preparation of liver or hog's stomach

can be judged during the treatment stage by the reticulocyte response which should occur within 5 to 10 days

If *subacute degeneration of the cord* be present, massive doses of liver are recommended in the early stages of treatment, 6 to 8 cc of Campolon or a similar preparation being given on alternate days. There is little evidence that large doses of iron are of special value.

In view of the serious nature of the condition these doses should be persevered with until marked improvement in the nervous symptoms is obtained. If progress is not satisfactory the dose of liver extract should be doubled.

When a reasonable degree of recovery has taken place, maintenance by the depot dosage method should be continued. Any indication of relapse requires an increase in the liver dosage.

If oral therapy with hog's stomach is employed the full dose (30 grams daily) should be permanently maintained.

Glossitis in pernicious anæmia is said to be improved by Nicotinic Acid.

Tropical macrocytic anæmia Crude liver preparations supplemented by Marmite are said to be more effective than concentrated extracts. An adequate amount of Vitamin C is necessary in the diet, and cases not giving a maximum response to liver therapy may do so after a four weeks' course of Ascorbic acid, 100 mgm daily.

Indications for liver or hog's stomach therapy are

- 1 All hyperchromic macrocytic anæmias
- 2 Subacute combined degeneration of the cord.
- 3 The pernicious anæmia of pregnancy
- 4 Hyper-chromic anæmia following gastrectomy
- 5 Sprue
- 6 Megalocytic anæmias of infancy and coeliac disease
- 7 Hypochromic macrocytic anæmia (supplemented with iron)

3 Anæmia due to Excessive Blood Destruction (Hæmolytic).

After an attempt has been made to deal with the cause, the residual anæmia requires treatment with full doses of

Iron In severe cases blood transfusion may be a life saving procedure, but serious reactions are liable to occur, so that blood should be given slowly by the drip method after the most careful grouping

APLASTIC ANÆMIA

Repeated blood transfusions may prolong the life of the patient Pentose Nucleotide (see p 6) has also been suggested as an aid to treatment

Another recent suggestion is "Marrow transfusion"¹ in which 5 c.c. of normal marrow is injected into the marrow of the patient

ANÆMIA IN INFANCY AND CHILDHOOD

This subject has received considerable attention in recent years, and it has been found difficult to classify the types which may occur For purposes of treatment it is important to decide upon the cause whenever possible so that this may be dealt with, and at the same time to discover whether the anæmia is of the hypo or hyper-chromic type

1 Due to defects of nutrition, such as occurs in children fed exclusively on milk for long periods, in coeliac disease in which absorption is defective, and in scurvy This type responds to iron which may be given as Ferri et Ammon. Cit in doses of 5 to 10 grams daily

It has been suggested that small amounts of copper may be necessary as a catalytic agent but that this is present in sufficient quantity in the above preparation

The following prescription has also been recommended

R. Ferri Sulphatis	gr 1½
Acid. Hypophos. Dil.	m. ½
Dextrosa	gr 15
Aq. Chloroformi	ad dr 1

2 Due to infection, e.g. pyelitis, umbilical sepsis in the newborn, etc

3 Due to excessive hæmolysis, e.g. following icterus gravis neonatorum or the acute hæmolytic (Lederer) type of anæmia

¹ *Lancet* 1940, ii, 815

The former should be treated by intramuscular injections of maternal whole blood, the latter by transfusion.

SUMMARY The majority of infantile anæmias are of the hypo-chromic type and respond to iron after the cause has been removed. If the anæmia is discovered to be of the hyper-chromic variety, liver or hog's stomach therapy should be employed.

Small doses of dilute Hydrochloric Acid, and vitamin B preparations are useful adjuncts to treatment.

ANÆMIA, SPLENIC (Banti's disease)

Splenic anæmia is a syndrome and cases may be placed in one of two main groups

1 Ordinary splenic anæmia, in which the blood platelets are diminished.

2 Cases in which the platelets are normal or increased in number (often associated with thrombosis of the splenic vein)

It is in the first group of cases that splenectomy may be indicated. In advanced cases when an operation of this magnitude would not be tolerated or is likely to be exceptionally difficult on account of adhesions ligature of the splenic vein and/or artery has been recommended. X ray or radium therapy may also be tried.

The second hyperthrombocytic type, should be treated by X ray therapy, splenectomy being contra indicated.

In both instances the associated anaemia must be treated with rest in bed and full doses of iron (Ferri et Ammon Cit 120 grains, or Bland's Pill, 90 grains daily).

Iron therapy is most important and should be thoroughly carried out before splenectomy is contemplated. Prior to any operation a blood transfusion may be necessary, the preliminary grouping being performed with special care in this condition on account of the danger of agglutination. Recent reports suggest that splenectomy does not improve the expectation of life nor prevent cirrhosis of the liver, anæmia or hæmatemesis. However, opinions

differ and each case must be judged on its merits. The operation is most likely to prolong life in young subjects before cirrhosis of the liver becomes advanced.

N.B.—The pathology of splenomegaly with anæmia, which in many instances is associated with hepatic cirrhosis is by no means clear and a number of conditions such as Gaucher's disease, Chiani's disease and Niemann Pick's disease appear to come in this category.

ANAL FISSURE

This is a common, troublesome complaint the pain of which is often out of all proportion to the severity of the condition. The fear of pain during defæcation leads to delay in emptying the rectum and the formation of hard fæces, a vicious circle which aggravates the condition.

In small, non indurated fissures medical measures may be tried, but those which are chronic, indurated or associated with a submucous abscess require operative treatment. Care should be taken to exclude any associated rectal lesion, especially carcinoma.

MEDICAL TREATMENT

1 *Relief of Constipation* The bowels must be opened regularly and the motions rendered soft. After an initial dose of Castor Oil, Liquid Paraffin, $\frac{1}{2}$ oz., t.d.s. with an adequate dose of Senna at night, or a Paraffin and Phenolphthalein emulsion may be given.

The introduction of 3 to 4 oz. of Olive Oil into the rectum at night by means of a fine catheter will also help to render the motions soft. The anus should be covered by a pad of wool kept in place by a T bandage.

2 *Relief of Pain* Any of the following may be applied

- | | | |
|-----|---------------------------|-------|
| (a) | 8% Cocaine in Castor Oil. | |
| (b) | R Bismuth Subnitrat | dr 2 |
| | Cocainæ | gr 10 |
| | Lanolin | oz. 1 |
| (c) | R Hydrarg Perchlor | gr 3 |
| | Pulv Opi Co (BP'14) | gr 10 |
| | Extr Belladonnæ | gr 6 |
| | Lanolin | oz. 1 |

If pain is very severe a Morphia suppository, $\frac{1}{4}$ grain to which Extract of Belladonna 1 grain may be added if desired is useful at night

3 *Local Applications* 50% Ichthyol in Glycerin may be applied daily on a glass rod or probe. A single application of Silver Nitrate 20 grains to 1 oz. although very painful at the time subsequently affords considerable relief

4 The *local injection* of an oil soluble anæsthetic e.g. Proctocaine. This results in relaxation of the sphincter and loss of sensation in the painful area (see also Pruritus ani)

SURGICAL TREATMENT

This consists of incising the fissure in order to provide adequate drainage with excision of indurated edges and any sentinel pile which may be present. It may be carried out under local anæsthesia. Division or stretching of the sphincter is now considered undesirable.

(For details of operative technique and after treatment see *Medical Annual* 1930 page 50)

ANAPHYLAXIS

Anaphylactic shock may occur as a symptom requiring very urgent treatment (1) if a second injection containing horse serum is given at any time after an interval of 10 days has elapsed from a previous dose of serum, (2) when the first dose of serum is given to an asthmatic.

Adrenalin, 5 to 15 minims (depending on the age of the patient) should be injected subcutaneously without delay. In very severe cases 5 minims may be given intravenously. If the symptoms do not abate the dose may be repeated or Atropine $1\frac{1}{2}$ grain given. The foot of the bed should be raised so that the head is low and hot blankets and hot-water bottles applied.

Artificial respiration may be necessary

Desensitization

This should be carried out by the route by which it is intended to give the second dose of serum i.e. subcu

taneously, intramuscularly, intravenously or intrathecally. (N.B.—The most severe shock sometimes having a fatal result is likely to follow an intravenous injection. Intravenous and intrathecal desensitization must, therefore, be carried out with particular care, the doses of serum suggested below being diluted with 10 c.c. of saline for the first injections and given slowly.)

If, therefore, sensitivity is suspected, inject at intervals of 5 minutes 0.5 c.c., 1 c.c., 2 c.c., 5 c.c. of serum by the appropriate route, and if no symptoms occur, follow with the full dose.

In cases of diphtheria which have previously had anti-toxin, a preliminary intramuscular injection of 1 c.c. followed 6 hours later by the full intramuscular dose of serum has been found satisfactory.

Adrenalin should always be at hand in case of emergency.

ANEURYSM, INTRACRANIAL

The clinical recognition of this condition before leakage or rupture has occurred is difficult, though sometimes possible. The features of spontaneous subarachnoid hæmorrhage are usually sufficiently clear for a diagnosis to be made.

The general principles of treatment employed in *subarachnoid hæmorrhage* are those which induce the cessation of bleeding elsewhere.

1. *Lowering of Blood-pressure.* No active measures are, as a rule, advisable. The patient should be at absolute rest in bed, and should remain there for 6 weeks. The most comfortable position should be adopted and, except when the patient is comatose, he may be propped up if desired. In cases with an exceptionally high blood-pressure, venesection may be considered.

2. *Control of Intracranial Pressure.* Unless signs of a severe increase in intracranial pressure are present no active measures should be undertaken. Lowering the pressure courts the risk of further hæmorrhage. The following procedures are reasonable:

- (a) A diagnostic lumbar puncture is generally necessary. A minimum quantity of fluid should be withdrawn. In cases where a doubt arises as to whether the bleeding is due to the trauma of the needle or to subarachnoid hæmorrhage a small amount of fluid should be collected in successive tubes. In the latter condition blood will be uniformly mixed with fluid in each specimen and if not less than 24 hours have elapsed from the onset of the hæmorrhage on centrifuging or allowing to stand the supernatant fluid will appear yellow in colour.
- (b) Do not repeat lumbar puncture in the acute stages unless there is evidence of increasing intracranial pressure which threatens life. In this emergency lumbar puncture may be repeated at intervals and an intravenous injection of hypertonic saline (15 to 30 c.c. of a 30% solution) or 50 c.c. of 50% glucose may be given.

3 *Control of Restlessness* Chloral and Bromide or one of the Barbiturates should be used in doses sufficient to produce the desired effect. Morphine would appear to be dangerous in some cases.

4 *Prevention of future Attacks* The relatives should be warned of the possibility of recurrence either in the immediate or distant future. The patient should be advised to avoid all sudden exertion especially straining at stool. The bowels should therefore be kept comfortably open both during the treatment of the acute condition and subsequently.

5 *Operative measures* to promote clotting around the aneurysmal sac have been carried out on selected cases (i.e. packing muscle around it). Ligation of the internal carotid artery is sometimes followed by hemiplegia and careful compression tests on the artery should be performed before this operation is carried out.

ANEURYSM, THORACIC

The main principles of treatment are (1) to rest the cardiovascular system as much as possible, i.e. diminish the rate and force of the heart-beat, (2) to treat any underlying cause, e.g. syphilis, (3) to attempt to promote clotting in the sac, (4) to treat symptoms as they arise.

(1) A period of rest in bed with freedom from worry and excitement is advisable in all cases for some weeks or even months. The subsequent amount of exercise permitted varies with the severity of the case. The diet should be restricted to the minimum calorie requirements of the individual and should be as light and dry as possible. The fluid intake should, therefore, be curtailed and taken between meals. The strict Tufnell regime, consisting of semi-starvation and absolute rest is now rarely carried out and the patient seldom submits to it for any length of time. Alcohol must be avoided.

(2) The Wassermann reaction should be performed in every case. Potassium Iodide is the most useful drug (15 grains, t.d.s.), and should always be given. In syphilitic types it should be combined with Mercury by mouth or inunction, or with Bismuth by injection, e.g. Bismostab or Iodo-bismuthate of Quinine. The use of Salvarsan compounds has been considered unwise, but more recent experience has shown that not only are they quite safe but that they are beneficial and should always be given with caution after a full course of Potassium Iodide and Bismuth, provided there is no heart failure or venous congestion and that anginal attacks are not a feature of the case.

A suitable course of Neoarsphenamine (N.A.B.) would be 0.3, 0.3, 0.3, 0.45, 0.45, 0.45, 0.45, 0.45, 0.45 gram. This could be repeated after 3 months. Alternatively Sulpharsphenamine may be given by intramuscular injection.

Nitrites may be given if high blood-pressure be present. (3) Although numerous suggestions have been made with a view to the induction of clotting within the sac few are of any value. Operative measures have been condemned

as dangerous, but recently successful results have been obtained by the introduction of Colt's apparatus into the sac of sacular aneurysms which have failed to respond to rest and antisiphilitic treatment, especially when there has been involvement of the chest wall or evidence of pressure on a bronchus or the œsophagus¹

(4) Pain is often reduced by Potassium Iodide. If severe, an ice bag, Amyl Nitrite, or Morphia may be required. Give inhalations or Heroin Lanctus for cough. Venesection is useful for cyanosis. If dyspnoea be due to paralysis of the vocal cords a few whiffs of Chloroform may help. Tracheotomy should not be performed in cases of aneurysm since it will not relieve dyspnoea due to pressure on a bronchus or the trachea.

ANGINA PECTORIS

This condition results from disordered coronary circulation and consequent myocardial ischaemia. A cramp like affection of the heart muscle, due to the accumulation of a chemical stimulus following the deficient blood supply is responsible for the pain. For purposes of treatment, the angina of effort must be distinguished from coronary artery thrombosis and benign cardiac pain (pseudo angina).

TREATMENT OF THE ATTACK

1 Having loosened the clothing about the neck allow the patient to remain at rest in the most comfortable position.

2 Inhalations of Amyl Nitrite, in 3 to 5

3 Tablets of Glyceryl Trinitrate, $\frac{1}{16}$ to $\frac{1}{8}$ grain chewed slowly are often more effective than (2).

4 For flatulence give peppermint, brandy or carminative mixture, e.g.

R. Menthol	gr 7
Spt. Ammon. Co.	
Spt. Chloroform	aa 1 oz
Tinct. Zinzibers	
dr 2 ex aq. as strong as possible	

¹ *Lancet*, 1935, i, 11 1940, i, 1037

Tinct. Opii Camph, m 20 to 30, or the following may be given

R Sodii Bicarb	gr 15
Spt Ammon. Aromat	m 15
Aq Chloroformi	ad 1 oz

5 If these methods fail, inject Morphine, $\frac{1}{4}$ to $\frac{1}{2}$ grain, with Atropine, $\frac{1}{16}$ grain, provided there is no bronchitis or advanced renal disease, or give a few whiffs of Chloroform

GENERAL REGIME BETWEEN ATTACKS

The aim of treatment is to reduce the frequency of the attacks and therefore the patient must be warned to live within the limits of his heart's strength, to avoid exertion which produces breathlessness, sudden chills emotional disturbances and dyspepsia from dietetic indiscretion.

After a severe attack, 2 to 4 weeks' rest in bed should be advised. Later increasing exercise graduated according to the tolerance of the patient, is beneficial provided he never attempts any exertion which he has found by experience to bring on the pain. He should wear flannel next to the skin, avoid a cold bedroom and cold bed.

The most useful drug in reducing the frequency of attacks and also in their immediate treatment is Glyceryl Trinitrate given in tablet form in doses of $\frac{1}{16}$ to $\frac{1}{2}$ grain. In order to be effective the tablets must be chewed slowly and thoroughly since the main route of absorption is the buccal mucosa. They deteriorate when stored in the open for more than a few weeks and when exposed to heat. The frequency of the dose must be determined by the occurrence of the attacks. In severe cases one tablet every 2 hours may be taken regularly, provided it does not cause flushing of the face, headache or throbbing of the arteries. Liquor Glycerylis Trinitratis, 1 to 3 minims, may also be employed as in the formula which follows.

Regular doses of Potassium Bromide, 15 to 20 grains or Phenobarbitone, $\frac{1}{2}$ to 1 grain, taken two or three times a day, help to combat the nervous factors which may precipitate an attack in neurotic subjects.

Four hourly catheterization is necessary to indicate the progress made

It is only necessary to limit the fluid intake in cases of acute glomerular nephritis

6 Stimulants such as Nikethamide (Coramine) or Strychnine may be required

7 In acute nephritis prompt renal decapsulation has been advised as a life saving measure

Cases due to *ureteric obstruction* (calculus anuria) require prompt treatment and operative measures should not be delayed beyond 36 to 48 hours After this period uræmic symptoms may supervene Conservative treatment similar to that required for the non obstructive forms may, therefore, be tried first (See also page 351) In addition

1 Filling the bladder with warm water may produce reflex stimulation of the renal excretion

2 Catheterization of both ureters is sometimes effective, the catheters being left *in situ*

3 If these measures fail, nephrostomy is necessary

APOPLEXY

When a case of this type first presents itself it may conveniently be described as apoplexy, the previous history and subsequent events later helping the physician to decide the actual nature of the cerebral catastrophe, viz Cerebral thrombosis, hæmorrhage or embolism, spontaneous sub-arachnoid hæmorrhage (see Aneurysm, intracranial, page 17), or hæmorrhage or œdema around a cerebral tumour

Cerebral thrombosis is the most common condition although many such cases are erroneously diagnosed as due to hæmorrhage It frequently occurs when the patient is at rest and the circulation is sluggish, while sometimes prodromal symptoms due to small local thromboses may be observed.

The immediate effect of an extensive thrombosis is the production of 'cerebral shock' probably due to local œdema When this has abated the prognosis is more

favourable than in cerebral hæmorrhage which is nearly always fatal

The majority of cases of hæmorrhage which recover are due to subarachnoid bleeding rather than to hæmorrhage into the brain substance. Cerebral embolism is characterized by the sudden onset of symptoms associated with cardiac or aortic disease. Uræmia and hypertensive cerebral attacks must also be considered in the differential diagnosis.

TREATMENT

1 *General Management* Although an attempt should be made to reach an accurate diagnosis of the lesion this is not always possible, so that a broad basis of treatment applicable to apoplexy in general, may be adopted.

The patient should be placed at absolute rest. It is often advisable to leave him in the room where the seizure occurred until the initial "shock" has passed off a mattress or couch being arranged for him to lie on. Subsequently he may be removed to bed when adequate assistance is at hand. The neck and shoulders should be slightly raised and care taken that the neck is not bent and is free from any pressure which might impede the return of venous blood from the brain. In unconscious patients the head and shoulders should be turned to one side in order to prevent the tongue from falling back and obstructing respiration.

During the period of "shock," warmth is essential and should be supplied by blankets and hot-water bottles.

Food Food is rarely required during the first 24 hours following a severe stroke. If the patient is conscious, sips of water, weak tea or milk may be permitted, but large quantities of fluid are inadvisable. If swallowing is impossible in an unconscious patient, nasal feeding should be commenced and rectal salines may be required. In any case, plenty of Glucose should also be given by the most suitable route.

Bowels In cases of thrombosis, purgation should be avoided and, while often recommended in cases of hæmorrhage, its benefit is doubtful. The bowels should, there

fore, he opened by enemata when necessary. The bladder must be watched carefully for retention of urine and under no circumstances should retention with overflow be permitted to occur. Catheterization at regular intervals may be required.

2 *Lumbar Puncture* The main value of this procedure is diagnostic for, in cases of hæmorrhage, the cerebrospinal fluid will be blood stained. In addition, opportunity should be taken of having the fluid examined, e.g. Wassermann reaction and colloidal gold test, in order to exclude meningo-vascular syphilis and dementia paralytica. In some cases the relief of tension is beneficial but in those with signs of bulbar compression there is danger of increasing these symptoms. As a rule therefore, only a minimum amount of fluid should be withdrawn.

3 *Venesection* In certain cases viz those with cyanosis and distended cervical veins, this may be considered but is of doubtful value.

4 *Stimulants* Strychnine, Nikethamide (Coramine) are only indicated when cardiac weakness is apparent. Alcohol is not required except for use as an easily absorbed food stuff.

Atropine may be required to check excessive bronchial secretion.

Chloral and Bromide may be given for restlessness or Morphia may be required.

5 *Syphilis* should be suspected in cases of thrombosis occurring under the age of forty and if a positive Wassermann reaction is obtained in the blood or cerebrospinal fluid, suitable treatment should be commenced without delay. Potassium Iodide may be given by mouth together with injections of Bismuth, or Mercury by inunction. The administration of Arsenical compounds may be considered at a later date.

6 *Subsequent Treatment* In severe, uncomplicated cases the patient should remain in bed for about 4 weeks. Milder cases may require only 10 to 14 days. Paralysed limbs may be wrapped in cotton wool and deformities should be prevented by suitable support or splinting. The greatest

care must be taken of the skin in order to prevent the development of bed sores. Massage may be commenced after 10 days and electrical treatment (faradism) given to the muscles. Improvement may be obtained for a period of about 3 months but is unlikely to continue after this period. A hemiplegic patient after he has been allowed up should be encouraged to walk as soon as his muscular power permits.

7 **SURGICAL MEASURES** e.g. decompression have been recommended for cerebral hæmorrhage. The clearest indication would be in the presence of deep coma with Cheyne-Stokes respiration and a rising blood pressure pointing to pressure on the vital centres in the medulla.

8 For after-care and prevention of recurrence see Hypertension page 176

ARTHRITIS, OSTEO-

This condition, which is a chronic degenerative disease of joints should be distinguished from the rheumatoid and infective types of arthritis. There is no constitutional disturbance and one or more of the larger joints are usually involved. Repeated slight trauma or a single more severe joint injury may be predisposing factors in its occurrence.

TREATMENT

1 Focal infection may be found and should be dealt with but it is unlikely to be a very important factor.

2 There may be evidence of ductless gland dysfunction. Subthyroid types will benefit by Thyroid. In others ovarian extract or some form of polyglandular therapy may be found useful.

3 *Diet* The diet to be recommended depends largely on the physical characteristics of the patient.

(a) In the under nourished type a diet of high caloric value rich in vitamins should be given.

(b) In obese plethoric individuals a low calorie diet is required and an attempt should be made to reduce the weight, especially if the arthritis affects the weight-bearing joints of the lower limb.

(c) In gouty types, the protein and purin containing substances should be reduced

(d) Some cases benefit by a vegetarian type of diet consisting mainly but not exclusively of fruit and vegetables

4 *Physical Measures* See Rheumatoid Arthritis, page 33

5 *Analgesic Drugs* See page 33

6 *Spa Treatment* This may be followed by marked improvement See page 31

7 **SURGICAL TREATMENT** This is especially indicated when the weight bearing joints are affected. Suitable orthopaedic apparatus may be necessary. In other cases, operations such as arthrodesis or reconstructive excision of the femoral head may be advisable. The age and physique of the patient must be taken into consideration before such measures are adopted.

ARTHRITIS, RHEUMATOID

Two main clinical types of the disease exist

1 Primary arthritis which is common in women of the child bearing period (No septic foci found)

2 Secondary arthritis Usually secondary to focal infection, e.g. teeth, tonsils, nasal sinuses, middle ear, gall bladder, appendix, bowel, female genital tract, bladder or bronchi. It occurs in two forms (a) Acute febrile type resembling rheumatic fever, (b) Subacute and chronic types

The characteristics of rheumatoid arthritis are that it is polyarticular, it tends to be symmetrical and to affect both large and small joints. Although many cases are obviously associated with focal infection and the organism which appears to have some causal connection is the streptococcus, in others some metabolic defect or upset of endocrine balance may be discovered.

The adequate treatment of any case, therefore, demands a review of the possible aetiological factors operating and that suitable investigations should be carried out, e.g.

1 X ray of teeth irrespective of whether obvious oral

sepsis is present or not. The discovery of apical abscesses indicates extraction of the affected teeth rather than whole sale sacrifice of them all. Mild degrees of pyorrhoea alone do not justify rendering the patient edentulous.

2. A ray of nasal sinuses if there is any reason to suspect them.

3. Bacteriological examination of the stools.

4. Pelvic examination with special reference to the state of the cervix (? chronic cervicitis).

5. Performance of the gonococcal fixation test to exclude or discover gonococcal cases. Prostatic massage with examination of urethral smears may also be necessary.

Further investigations may be carried out if the history or clinical findings point to some other organ or system.

Whenever possible, bacteriological examination should be made of pathological material e.g. pus from an apical abscess and if suitable organisms are obtained, a vaccine may be prepared.

General Measures

As a rule, pain and pyrexia will necessitate keeping the patient in bed during the acute stages. The diet should be generous and suited to the patient's ability to digest it. Regulation of the bowels is important.

Focal Sepsis

Search should be made for a focus of infection in all cases as indicated above and although the ideal procedure is to eliminate it as soon as possible, this step may be followed by an exacerbation of symptoms. Hence it is often wise to wait for a week or two for the more acute manifestations to subside.

The search for focal sepsis and its eradication should always be tempered with discretion and patients should not be subjected to successive removal of teeth, tonsils and other organs as a routine measure.

If a suspected focus is found and its removal fails to produce the improvement hoped for, it suggests that (1) it was not causing the condition (2) some other focus remains undiscovered or (3) another factor is operative in producing the disease.

Vaccines

Sometimes the use of a vaccine is attended by good results at others it is *disappointing*, it is, however, worth a trial in the majority of cases, whether acute subacute or chronic in type, if a *likely organism is obtained*. Either a stock or an antogenous vaccine may be employed, but the latter is preferable. It is wise to commence with small doses, e.g. 25 000 especially if an uneradicated septic focus be suspected. If it is certain that focal sepsis is not present 500 000 would be a suitable dose. The amount is increased gradually up to about 10 million organisms by injections at intervals of 6 days. The dosage should stop short of producing a definite reaction i.e. an increase in the local symptoms pyrexia malaise, etc.

It must be emphasized however, that the use of vaccines has not been attended by the success that was hoped for except in gonococcal arthritis which should always be given a course of vaccine therapy.

Gold Treatment

Many cases show considerable improvement with this form of therapy, whether acute or chronic in type, and it may be used to supplement vaccine or other treatment. In fact, it may be regarded as a very valuable empirical remedy. Early cases in which the blood sedimentation rate is raised appear to be the most successful.

Preparations exist for intravenous intramuscular and oral administration. The intramuscular route would appear to be preferable in the majority of instances. The most popular preparations are

- Solganol B Oleosum (Schering)
- Lopion (Bayer)
- Myocrisin (Pharmaceutical Specialities)
- Crisalbin (ditto)
- Allochrysin (Lumière)

The injection should be made into the upper and outer quadrant of the buttock or into the outer side of the thigh.

Improvement must not be expected after the first few doses, in fact, it may not be markedly manifest until the

course has been finished and, in some instances, repeated. As the dose increases, a temporary exacerbation of symptoms may be expected. Such a reaction is a good omen and suggests that the defence mechanisms of the body are responding to the treatment. Excessive reactions are, however, undesirable.

The actual dosage to some extent varies with the case. The following course is suitable for the majority of cases — 0.025 gram and 0.05 gram, followed by 0.1 gram at weekly intervals until a total of 1.0 gram has been given. Several courses repeated at intervals of two to three months are usually necessary.

Occasionally larger doses are given, e.g. three injections of each of the following doses at weekly intervals, viz 0.05, 0.1, 0.15, 0.2 gram. After a rest period of 8 weeks, three injections of 0.1, and six of 0.2 gram.

Contra-indications are (1) Previous or co-existing tuberculosis, (2) Severe renal or hepatic disease, (3) Anæmia, (4) Previous purpura hæmorrhagica, unless the platelet count and tourniquet tests are satisfactory, (5) Eczema or skin disorders (except psoriasis, which may be improved).

Complications of Gold Treatment — It is of utmost importance to recognise and treat toxic symptoms at the earliest possible moment.

Rashes With heavy doses, the commencement of a second course before 8 weeks have elapsed, and in some supersensitive individuals during the first course, skin eruptions may occur. With their appearance, the injections should be temporarily suspended. Calcium Gluconate, 20 c.c. of a 10% solution, should be given by intravenous injection and liver extract by the mouth or by intramuscular injection. When gold treatment is resumed, each dose may be combined with 10 c.c. of 10% Calcium Gluconate by intramuscular injection or a daily dose of dr 2 to 3 by mouth.

In view of possible medico-legal sequelæ it is wise to warn the patient of the possibility of a skin eruption and to obtain written consent for the treatment to be carried out.

is suitably commenced in the spring and carried on through out the summer and autumn. All heliotherapy must be suspended if gold therapy is employed.

Blood Transfusion

When other methods have failed, a blood transfusion which is repeated in 8 days is said to produce improvement in some cases.

Oestrin

Improvement in the general condition of the patient but not necessarily of the joints in menopausal cases may be obtained by injections of oestrin commencing with 10 000 units daily and extending to weekly intervals.

Diet

Pyrexial cases will require a light or fluid diet. In any case an easily digested diet of high nutritive value rich in vitamins should be supplied. Milk cream eggs fruit and fruit-juice vegetables with meat chicken and fish should be allowed. Cod liver Oil or one of the poly vitamin preparations on the market may be given. Vitamin C is said to be especially useful. If there is a tendency to put on weight especially at the menopause carbohydrates should be restricted.

Spa Treatment

Many cases of rheumatoid arthritis derive marked and permanent benefit from spa treatment. In addition to the baths and waters ancillary aids are available. It is important therefore to consider this line of approach to a case at a reasonably early stage of the disease when most benefit is likely to be obtained. The most suitable of the English spas include Droitwich (all the year round) Buxton (summer) Harrogate and Bath.

Contra indications (1) The acute stages (2) Severe cardio vascular or renal disease (3) Associated tuberculosis or malignant disease.

LOCAL TREATMENT

Local applications of value include

(a) Methyl Salicylate Liniment

Equal parts of Aconite, Belladonna and Chloroform
Liniments (i.e. Lin. A.B.C.)

Antiphlogistine (Cataplasma Kaolin)

Paraffin wax baths (see page 231)

(b) Radiant heat

Diathermy

Infra red rays (especially valuable)

Hot-air baths local and general

SURGICAL TREATMENT

Apart from suitable splinting or application of plasters in order to correct or prevent deformities no active measures can be carried out during the acute stages. When all inflammation has subsided and the disease appears to be quiescent manipulation to correct deformities or the fixation of a joint in the most mechanically advantageous position may be advisable, but each case must be decided on its merits and the opinion of an orthopaedic surgeon.

The treatment of any case of rheumatoid arthritis requires infinite patience and perseverance on the part of the sufferer and of his medical attendant.

ASCITES

The causes of ascites are so varied that the treatment of the primary condition must be the first consideration. When the accumulation of fluid is causing distress or cardiac or respiratory embarrassment it may be necessary to take steps to reduce its quantity or to remove it.

Simple measures such as the administration of Pil Hydrarg. Diuretica (Compound Digitalis Pill) may be tried. More effective are intravenous or intramuscular injections of Mersalyl (Salyrgan) 1 to 2 c.c., daily or on alternate days combined with Ammonium Chloride 20 grains t.d.s. by mouth, which enhances the action

of the former drug. Moderate reduction (e.g. to 40 oz.) of the fluid intake is advisable.

If these measures are unsuccessful or the case is urgent, *paracentesis abdominis* should be carried out. Care must be taken that the bladder is first emptied, by catheterization if necessary. A suitable stimulant such as Nikethamide or Strychnine should be at hand, and an abdominal binder or many tailed bandage placed in position before the operation commences. After infiltration of the skin with a local anæsthetic, the trocar and cannula is introduced in the mid line half way between the umbilicus and the pubis or laterally. A preliminary nick made in the skin with a scalpel sometimes facilitates the insertion of the trocar, which should not be too large. The size usually employed for tapping a hydrocoele or one only slightly larger is ideal since it permits only the gradual drainage of the fluid.

A fine rubber tube conducts the fluid to a suitable receptacle under the bed. The binder should not be permitted to become slack and should be retained in position for 24 hours.

In certain cases, such as cirrhosis of the liver, (see page 199) repeated tapping may be required and should be carried out at intervals demanded by the comfort of the patient.

ASTHMA, BRONCHIAL

TREATMENT OF ACUTE ATTACK

1 The most effective remedy is the early injection of Adrenalin (1 in 1000), 3 to 5 minims. If given immediately, a dose of 1 to 2 minims may be sufficient, and for this reason it is wise to instruct the intelligent patient how to give this himself. Some patients respond well to Ephedrine.

A combination of Adrenalin and Pituitrin may be more effective in some cases (e.g. Evamine or Asthmolysin).

Subcutaneous or intramuscular (if repeated) injections of Adrenalin in oil (2 mgm. in 1 c.c. Peanut Oil) will give a more prolonged effect, but is delayed in its onset of action.

2 Injections of Atropine, $\frac{1}{16}$ grain repeated if necessary, are sometimes of value

3 Inhalations of Oxygen and CO_2

4 Nasal sprays, if employed when slight wheezing is detected are often efficacious in warding off an attack

(a) Adrenalin spray (1 in 1500) or Ephedrine (1 in 100)

(b) R Mentholus	gr 10
Atropini Sulph	gr $\frac{1}{2}$
Paraffin Laq	ad 1 oz

Some proprietary preparations are also useful

5 Morphia will often stop an attack but apart from the fact that its repeated use is undesirable on account of habit forming properties it is not without grave danger, and a number of deaths have followed its use in asthma. It should, therefore not be employed

Status Asthmaticus, Hurst recommends continuous injections of Adrenalin in small doses. The usual dose of 3 to 5 minims is injected. The needle is left *in situ*, and 1 minim is given at intervals of $\frac{1}{2}$ $\frac{1}{2}$ or 1 minute according to the patient's reaction. This may be continued for a period of half an hour or longer until relief follows

TREATMENT BETWEEN ATTACKS

Many theories have been advanced relating to the cause of asthma and many bio-chemical problems remain unsolved. It follows that numerous remedies and schemes of treatment have been employed

Two main groups of cases would appear to exist, but it may be assumed that there is a basis or "asthma diathesis" common to both. In addition, hereditary or psychological factors may be present

1 The allergic group, in which positive skin tests may be obtained and eosinophilia is present in the blood and sputum during the attack

2 The non allergic group, either reflex or infective in origin (N.B.—The latter however, may result from sensitization to a bacterial toxin)

INVESTIGATION OF A CASE OF ASTHMA

If an attempt is to be made to cure a case of asthma the following investigations are necessary in order to be fully possessed of the available facts

1 A careful history must be obtained in order to discover any factors liable to precipitate an attack, especially foods, articles containing animal hair,orris root face powder, climatic conditions, locality and any association with coryza or bronchitis

2 Examination of the blood and sputum for eosinophilia during an attack

3 If eosinophilia be present, a set of skin tests may be performed

4 The teeth, nose, nasal sinuses and tonsils should be investigated for the presence of focal sepsis or other defects, X rays being taken when indicated

5 X ray of the chest and examination of the sputum for tubercle bacilli, especially in those cases associated with low blood pressure

6 Examination of the sputum for pathogenic organisms, especially Streptococci, B Friedlander and Micrococcus Catarrhalis (NB—A vaccine may be indicated)

7 Estimation of the blood sugar (NB—Glucose may be of value in hypoglycæmic types)

One or more of the following lines of treatment may then be adopted according to the findings

General Considerations

The general health should be maintained at the highest possible level and constipation and flatulence avoided. Meals should be light and easily digested. No heavy meal is advisable after 5 to 6 p.m.

Asthmatics are variable in their response to climatic influences. Some enjoy freedom from attacks when in town, others when in the country or at the seaside. Residence at high altitudes often affords complete immunity from paroxysms but is inadvisable in cases with emphysema or when there is evidence of cardiac insufficiency, and it

must be remembered that the malady may reappear on return to normal life

Cases with bronchial catarrh may be advised to spend the winter in warm, sunny, seaside resorts

Routine Treatment

Ephedrine Hydrochloride, by mouth, $\frac{1}{2}$ grain, t d s, or 1 grain, at night if the attacks tend to be nocturnal, helps to reduce the frequency of spasms. Caffeine is useful in some cases. One of the following mixtures may also be given, especially when there is a tendency to wheeziness of the chest

R	Tinct Lobeliae Aeth.	m	15
	Tinct Stramonii	m	5
	Potassu Iodidi	gr	3
	Aq Camph vel Chloroformi	ad 1 oz	t d s
or	R Potass Iodidi	gr	5
	Potass Bromidi	gr	10
	Spt Ammon. Aromat . . .	m	20
	Aq Chloroformi	ad 1 oz	t d s

Theophylline, 1 to 4 grains daily, may be of value in some cases

Breathing Exercises

These are beneficial in the majority of cases their value being to increase the mobility of the chest and to improve the psychological outlook. When the patient has learnt the technique, an impending attack may often be aborted by carrying out suitable exercises. The main points are short inspiration through the nose with full expiration through the mouth associated with retraction of the epigastrium¹

Liver Therapy

A course of injections of liver extract may be tried (e g Campolon, Hepatex, Hepastab, etc) Small daily doses, 2 c c, or, preferably, larger doses at longer intervals, 10 c c every week or fortnight

¹ See Livingstone, J L, and Gillespie M., *Lancet*, 1935 ii, 707, and for details, "Physical Exercises for Asthma, Asthma Research Council, 1934

Chryso-therapy

A short course of intravenous injections of Sanocrysin given at weekly intervals sometimes has a strikingly beneficial effect in reducing the frequency and severity of attacks.

The urine should be tested for albumin, but I have seen no ill effects from the following short course 0.05 0.1 0.15 0.15 0.2 0.2 gram

If preferred one of the gold preparations (page 30) suitable for intramuscular injection may be employed.

ALLERGIC TYPES

(a) When the allergic substance is discovered it is sometimes possible to produce desensitization by a series of injections of the specific antigen, which usually requires special preparation (Commencing dose = 1 in 100,000)

(b) Non specific desensitization. For this purpose Peptone is employed either by intravenous or intramuscular injection. Armour's Peptone No. 2 may be given twice weekly commencing with 0.3 cc and increasing by 0.2 cc until the maximum dose of 2 to 2.5 cc has been reached. The optimum dose is one which just fails to produce a reaction so that the temperature should be taken 4 hours after each injection.

(c) Whole blood injections of 5 to 10 cc may be tried at weekly intervals

NON ALLERGIC TYPE

Any obvious focal sepsis should be eradicated, but extensive operations on the nose though sometimes advised are of doubtful value even the removal of nasal polyps often fails to produce any improvement.

Cases associated with bronchitis may be improved by the use of an autogenous vaccine if pathogenic organisms can be obtained from the sputum.

A method of treatment suggested for intractable cases is dorsal perisymphatic injection of alcohol.¹

¹ Levin, G. L. L. *Lancet* 1934, ii, 249

ASTHMA IN CHILDHOOD

Asthma is not uncommon in childhood and appreciation of the clinical features is necessary if adequate treatment is to be carried out.

(a) The age of onset may be very early and, in many instances, it may be confused with repeated attacks of bronchitis. Rarely, the onset coincides with the commencement of artificial feeding with cow's milk. In such a case a skin test will reveal hypersensitivity to the protein of cow's milk and it may be necessary to try goat's milk or even a diet entirely devoid of milk.

(b) Hereditary factors often play an important part. A family history of asthma or some other allergic state such as hay fever, urticaria, or migraine being obtained.

(c) There is a tendency for asthma of this type to disappear at puberty, but it may be replaced by one of the other allergic states. The diathesis also includes the liability to cyclical vomiting, eczema and ichthyosis.

TREATMENT

This includes skin tests so that any specific protein thus discovered may be avoided and, if necessary, desensitization undertaken. Sensitivity to feathers is common, so that bedding should be upholstered with kapok. The most likely allergens before the second year are foodstuffs, from the second to the ninth year, animal emanations, after the ninth year, pollens. Any obvious focus of infection such as septic tonsils or adenoids should be removed especially if attacks follow acute tonsillitis or nasal catarrh.

The removal of tonsils and adenoids in the absence of obvious infection will not be beneficial.

An X ray of the chest is necessary in some cases in order to exclude pulmonary fibrosis, bronchiectasis, enlarged mediastinal glands, etc.

Asthmatic children who manifest intestinal disturbances may often be improved by careful adjustment of the diet and regulation of the bowels with mild laxatives such as Syrup of Senna.

It has been found that a high proportion of asthmatic children have a low gastric acidity. Dilute Hydrochloric Acid should therefore be tried in doses of 20 to 30 minims, three times a day. In complete achlorhydria as much as 60 minims may be required.

Small doses of Ephedrine taken regularly, are sometimes of value or the following mixture may be given (child of five)

R. Potass Iodid	gr 2
Syrup Auranti	m 30
Aq ad $\frac{1}{2}$ oz t i s	

Glucose seems to be of use in some instances and may be given as a draught 2 oz in lemon water, on waking and on going to bed. A ketogenic diet (see page 291) may be tried in resistant cases.

BED SORES

PREVENTION

Skilled and careful nursing is the best preventive.

1 Since bed sores are mainly due to continued pressure on some bony prominence the patient's position in bed should be changed at intervals during the day and night.

2 Air or water cushions are often necessary and should be covered by smooth and creaseless linen draw sheets. Small rings of cotton wool or Gamgee tissue covered with bandage may be used for the heels or elbows.

3 The back and bony prominences after washing with soap and water, should be carefully dried, then rubbed with methylated spirit and finally powdered with a fine dusting powder, e.g. Starch and Zinc Oxide. This should be done at least twice daily and more frequently if the parts are soiled by incontinence.

TREATMENT

Once the skin has broken, various methods of treatment are available.

1 Strapping with Elastoplast After cleaning Elastoplast may be applied without stretching and with no intervening dressing to open bed sores or to areas of skin which threaten to break down. A second layer should be applied over the first and both should overlap the affected area by at least an inch. In the case of large ulcers, strips of Elastoplast may be placed side by side until the area is covered. The plaster may be removed and re applied after 7 to 10 days. This method is especially useful in incontinent cases as it prevents contamination of the open sores.

2 Tannic Acid A freshly made 5% aqueous solution may be applied on lint until a coagulum forms as in the treatment of burns. Infection may necessitate removal of the crust at a later date but Tannic Acid may be re applied.

On the same principle Triple Dye jelly (Gentian Violet 1% Brilliant Green 1% Acriflavine 0.1% in Mucilage of Tragacanth) may also be used.

3 Various lotions may be used for dressing a bedsore e.g. 1 in 100 Zinc Sulphate Lotio Rubra.

4 Scarlet Red ointment is a useful application to healing sores if the above methods are not adopted.

5 Local applications of ultra violet light or infra red rays are of value in indolent ulcers.

6 Ol. Morrhuae is also a useful dressing in some cases.

BOILS

LOCAL TREATMENT

1 In the early stages a small boil can often be aborted by repeated painting with Tincture of Iodine.

2 The following ointment may be applied twice or three times daily.

Ichthyol	gr 45
Hydrarg. Perchlor	gr 1½
Paraff. Moll. Flav	oz 1

3 The application of an Elastoplast Boil Dressing (medicated with mercury and carbolic) is useful.

4 When suppuration cannot be avoided Antipblogistine is a valuable application which can be continued until the core has separated Hot fomentations should be avoided as they tend to spread the lesion to the surrounding parts

5 Sometimes incision is necessary but early opening is not advisable

6 A suction cup if available often hastens suppuration and the evacuation of the core

7 When the boil is discharging or the core is beginning to separate a dressing of Magnesium Sulphate paste is probably the best application

Mag Sulph Ets c	2 oz
Glycerin (by weight)	1 oz

GENERAL TREATMENT

The appearance of a single boil does not call for any special general measures but the occurrence of successive crops indicates

1 The urine should be tested for sugar (Temporary glycosuria or fully developed diabetes may be present)

2 Stock or autogenous vaccines containing Staphylococcus Aureus may be given in obstinate cases 50 million is a suitable dose with which to commence but the course should be interrupted with the appearance of a fresh boil

3 Weekly intramuscular injections of Collosol Manganese 1 c c are sometimes useful

4 Any of the following may be given by mouth Stannoxyl 6 tablets daily Calcium Sulphide $\frac{1}{2}$ to 1 grain as a pill Yeast

Boils in External Auditory Meatus (see page 103)

Boils on the Upper Lip

These are especially dangerous on account of the occasional sequela cavernous sinus thrombosis Incision and any form of manipulation or squeezing must be avoided Applications of Antipblogistine or Magnesium Sulphate paste or repeated exposure to Infra red rays are the best forms of local treatment

Sulphathiazole should be given Sulphapyridine, though useful is probably less effective

BOTULISM

This is fortunately a rare form of food poisoning but sporadic cases and small outbreaks are seen from time to time. The main signs are dizziness and involvement of the cranial nerves, especially the third, resulting in diplopia, squints, ptosis, dysphagia and dyspnoea. The only treatment of any value is the early injection of Botulinus Anti-toxic Serum which may be obtained from the Ministry of Health or the local Public Health Authorities.

(In some circumstances this might be used as a prophylactic measure.)

Alcohol in large doses is said to be of value. Strychnine may be given for collapse, and Morphine may be required.

BRONCHIECTASIS

An effort should be made to arrive at an early diagnosis, and for this purpose the injection of Lipiodol or Iodised Oil (B.P.), opaque to X rays, is often necessary.

It is to be remembered that dry bronchiectasis may occur but is eventually followed by suppuration. Haemoptysis is also fairly common and not infrequently leads to the erroneous diagnosis of pulmonary tuberculosis.

In view of the progressive and serious nature of the malady and the temporary effect of purely medical treatment, the modern tendency is to employ SURGERY in all suitable cases. I.e. the general health must be satisfactory, the age not over forty five, the process must be limited to one lobe, the opposite lung being sound. In such instances the operation of choice is lobectomy. In exceptional cases pneumonectomy or bilateral lobectomy have been performed. Occasionally thoracoplasty or phrenic avulsion may be indicated. Artificial pneumothorax is seldom possible and is of very doubtful value.

Lobectomy in childhood is very successful and should be carried out early, before bronchiectasis has spread from the lobe first affected

MEDICAL AND PALLIATIVE TREATMENT

In addition to care of the general health, efforts are directed to reducing the amount of expectoration and removing the factor

1 *Postural Drainage* This is of great importance and should always be carried out. If the patient is confined to bed, in lower lobe bronchiectasis the foot of the bed should be raised and the patient should lie on the sound side. If, less commonly, the upper lobe, he should sit up. Alternatively, the patient may assume the knee-elbow position or lean over the side of the bed with his head nearly touching the floor, for a definite period at regular intervals during the day.

Special adjustable beds for postural drainage can be obtained (Nelson type)

2 *Inhalations* The most effective is the inhalation of Creosote vaporized by heat. This requires a special chamber, although occasionally a small room or cellar can be adapted. The eyes must be protected by close fitting goggles. The time of exposure is gradually increased from 15 to 45 minutes daily.

10 to 15 minims of a mixture of equal parts of Creosote and Alcohol may be inhaled from a respirator.

3 Creosote, 3 to 5 minims, may be given internally in capsules three times a day.

4 Sepsis in the mouth and nasal sinuses must be eradicated.

5 Vaccines may be employed, the organisms if possible, being obtained directly from the affected area at bronchoscopy.

6 Repeated bronchoscopy, with aspiration and lavage of the cavities, may sometimes be carried out with great success especially in the early cases.

BRONCHITIS, ACUTE

1. At the onset the patient should be confined to bed in a warm room in order to prevent the spread of the process.

2. Give a light diet, plenty of fluids, e.g. lemonade with glucose, and demulcent drinks, e.g. honey and lemon. Alcohol is only required by those accustomed to its use.

3. The bowels should be opened by a suitable aperient.

4. The atmosphere of the room may be moistened for 10 to 15 minutes every hour by a bronchitis kettle. Inhalations of Tinct. Benzoin. Co., dr. 1 to 1 pint of very hot water, may be given. In the later stages this may be replaced by Creosote or Ol. Pini.

5. Local applications to the chest are comforting, e.g. Capsicum tissue (Thermogene), Camphorated Oil, or Antiphlogistine (Kaolin Poultice) for pain.

6. Sulphapyridine or Sulphathiazole are of value in severe cases.

7. In the early stages before bronchial secretion is established give:

R. Tinct. Ipecac.	. . . .	m. 20
Spt. Ætheris Nit.	. . . .	m. 20
Liq. Ammon. Acetat. Dil.	. . . .	dr. 1
Aq. Camphor.	. . . . ad 1 oz.;	every 4 hours.

or (in otherwise healthy adults)

R. Vin. Antimonialis	. . . .	m. 20
Potassu Bicarb.	. . . .	gr. 10
Potassu Nitrat.	. . . .	gr. 10
Aq. . . . .	. . . . ad 1 oz.;	every 4 hours.

If there is a tendency to asthma with bronchial spasm the following may be preferred:

R. Tinct. Lobelæ Æth.	. . . .	m. 15
Potassu Iodidi	. . . .	gr. 5
Tinct. Stramon.	. . . .	m. 10
Extr. Glycyrrhiz. Liq.	. . . .	m. 10
Aq. Chloroformi	. . . . ad 1 oz.;	every 4 hours.

or	R. Tinct. Belladonnæ	m. 10
	Potassii Iodidi	gr. 3
	Ammon. Carb. . . .	gr. 3
	Potassii Bicarb. . . .	gr. 15
	Aq. Camphoræ	ad 1 oz. t.d.s.

8. In the second stage when the cough is loose, the steam in the room should be discarded although inhalations may be continued. "Stimulating expectorants" are required, e.g.

R. Tinct. Ipecac.	m. 10
Ammon. Carb.	gr. 4
Tinct. Scillæ	m. 15
{Syr. Tolu.	dr. 1)
Infus. Senegæ	ad 1 oz.; every 4 hours.

or	R. Ammon. Carb.	gr. 10
	Tinct. Scillæ	m. 10
	Tinct. Opi Camph.	m. 30
	Spt. Chloroformi	m. 20
	Aq.	ad 1 oz.; every 4 hours.

A mixture found useful in some mild cases is.

R. Extr. Ipecac. Lq.	m. 1
Tinct. Opi Camph.	m. 30
Oxymel.	dr. 1
Pot. Cit.	gr. 20
Aq.	ad 1 oz.; every 4 hours.

9. A linctus, e.g. Linct. Camph. Co. or Linct. Diamorphinæ (Heroin), may be required for an irritating cough at night (see also Chronic Bronchitis).

10. Sleep is essential and every effort must be made to obtain an adequate amount. Dover's Powder, 10 to 15 grains, is useful in the early stages. Later, one of the Barbiturates may be employed if simple measures fail.

Morphia may be necessary in some cases and should be combined with Atropine $\frac{1}{16}$ grain. It must be avoided if cyanosis or basal congestion be present, and in these circumstances, Paraldehyde, though unpleasant, is the best drug to employ:

R	Paraldehydi	dr	1 to 2
	Glycerin	dr	1
	Spt Vini Rectificat	dr	2
	Aq Cinnamomi	ad	1 oz
	Fiat Haustus		
or	R Paraldehydi	dr	1 to 2
	Extr Glycyrrhiz. Liq .	dr	1
	Aq	ad	2 oz

11 Cardiac failure will require appropriate treatment. A timely venesection if cyanosis be marked is often of great value.

12 Tonics should be given during convalescence.

BRONCHITIS, CHRONIC

It must be remembered that bronchitis may be associated with chronic cardiac or renal disease, emphysema and other conditions which require appropriate treatment. Care should also be taken to exclude pulmonary tuberculosis especially in the elderly by sputum examination and X ray of the chest if the condition is very persistent.

PREVENTION

1 *Climate* A warm dry climate is desirable with avoidance of damp fogs and cold wind. In England the south or south east districts are preferable e.g. Hastings, Bournemouth, Isle of Wight or Cornwall and Devon. Abroad the Riviera, the north coast of Africa and Egypt or Madeira are suitable during the winter months. Farther afield Jamaica, Cuba and California are said to offer favourable conditions. High altitudes should as a rule be avoided.

2 *Clothing* Light warm woollen underclothing should be selected. The waistcoat may be lined or a suitable pull over employed. Chest protectors are usually excessively hot and are liable to produce sweating. Once the patient is accustomed to their use they are difficult to discard without producing chills.

3 *Occupations* which expose the patient to inclement weather or to a dusty atmosphere should be avoided.

4 *Diet* should be moderate and light. Heavy meals at

night are inadvisable. Excess of alcohol and tobacco are to be avoided. Cod liver Oil alone or combined with Malt Extract should be taken during the winter months.

5 *Vaccines* An autogenous or suitable stock anti catarrh vaccine given early in the autumn may be found useful in a few cases of recurrent bronchitis. Results on the whole are disappointing and if employed a vaccine should commence with small doses e.g. 1 c.c. containing

Streptococci	25 million
Micrococcus Catarrhals	50 million
Bacillus Friedlander	50 million
Pneumococcus	250 million
Bacillus Influenzae	250 million

Course — 0.1 0.2 0.3 0.5 0.75 1 c.c. at weekly intervals.

TREATMENT

1 *Drugs* There are many prescriptions from which to choose but an endeavour should be made to select one suitable for the needs of each individual case at the particular time.

For morning cough especially if dry

R. Soda Bicarb	gr 10 to 15
Soda Chlor	gr 3 to 5
Spt Chloroform	m. 5
Aq Anisi	ad 1 oz

Fiat Haustus to be taken in an equal amount of hot water on rising

If bronchial spasm be marked

R. Potassu Iodida	gr 3
*Tinct Hyoscyami	m. 30
Tinct Stramonii	m. 5
Extr Glycyrrhiz Lq	m. 10
Aq Chloroform	ad 1 oz t.d.s
*and/or Tinct Belladonnae	m. 10

When sputum is scanty

R. Potassu Iodida	gr 5
Ammon. Carb	gr 5
Potassu Bicarb	gr 15
Tinct Stramonii	m. 5 to 10
*Extr Glycyrrhiz. Lq	m. 20
Aquam	ad 1 oz t.d.s
* or Syr Tolu	dr 1

Other similar mixtures can be made containing Lohelia, Belladonna or Grindelia. Another useful mixture for use in chronic bronchitis is :

R Tinct. Nucis Vom.	. . . .	m. 5
Tinct. Scillæ	. . . .	m. 15
Ammon. Carb.	. . . .	gr. 5
Spt. Chloroformæ	. . . .	m 5
Infus. Senegæ	. . . .	ad 1 oz. t.d.s

In order to allay troublesome cough, lozenges may be used, e.g. Troch. Glycyrrhizæ (Brompton) or a suitable linctus of which many exist, e.g. :

1. R Tinct. Opi Camph. } aa part. æq
Oxymel Scillæ } Dose = 1 to 2 dr.
Syrup Tolu.
2. R Syr. Codein. Phos. } aa part. æq.
Syr. Pruni Serotinzæ } Dose = dr 1 to 2
3. R Syr. Scillæ }
Syr. Papaveris } aa m. 15
Syr. Tolu. } Dose = dr. 1
Syr. Lamonis }

Another useful, if complicated and perhaps expensive mixture is :

R Syr. Codein Phos.	. . . .	dr. 1
Syr. Pruni Serotinzæ	. . . .	dr. 1
Syr. Rhoeados	. . . .	m. 30
Tinct. Lavandulæ Co.	. . . .	m. 10
Lq Morphinzæ Hydrochlor	. . . .	m. 10
Spt. Chlorof.	. . . .	m. 7
Aq. Rosæ	. . . .	ad 1 oz.

Three or four times a day.

2. *External Applications.* Mild counter-irritation by rubbing with Camphorated Oil or Lin. Terebinthinæ Aceticum (B.P.) is useful for soreness of the chest.

3. *Inhalations.* Steam inhalations may be given provided the patient remains indoors for some time after their use, e.g. :

1. Tinct. Benzoin. Co. dr. 1 to 1 pint of hot water.
2. R Ol. Eucalypt. }
Ol. Pini } aa m. 20
Tinct. Benzoin. Co. }

A regular course of inhalations using a special form of atomizing inhaler, e.g. the Apneu type, connected to an oxygen cylinder and having a metal face piece, has gained considerable popularity recently and is of value if the apparatus is available

COMPLICATIONS

For insomnia, Bromides, Dover's Powder, Barbiturates or Paraldehyde may be tried. In persistent cases, Morphia combined with Atropine may sometimes be used to tide over a difficult period provided there is no cyanosis

(See also Acute bronchitis, Cardiac failure)

CANCERUM ORIS. (Gangrenous stomatitis)

On account of its insidious onset the earlier stages are apt to be overlooked. When discovered, the whole of the gangrenous area must be excised without consideration of the deformity produced. An incision from the angle of the mouth to the border of the masseter muscle will give the necessary exposure. After removal of all necrotic material, pure Carbolic, strong Nitric acid or the actual cautery should be applied freely to the exposed tissues. Subsequent syringing with Eusol or Sanitas may be carried out. Dressings of hypertonic Sodium Sulphate, Urea crystals or Eusol packs may be also employed. If the child survives, a plastic operation will be required. Sulpharsphenamine may be given by intramuscular injection during the acute stages

CARBUNCLE

LOCAL TREATMENT

Surgical measures are indicated (1) For relief of pain (2) When there is a tendency to spread

1 A simple cruciate incision may be made, but this does not really afford adequate drainage and much necrotic tissue remains *in situ*

2 A cruciate incision combined with excision of the necrotic matter. The cavity may be packed with Magnesium Sulphate paste —

Mag Sulph Emul	2 oz
Glycerin (by weight)	1 oz

3 Complete excision of the affected area. This is a radical procedure following which a skin graft may be required.

4 In some instances treatment with Magnesium Sulphate paste spread on a piece of lint, and covered with Jaconet and changed twice daily, may obviate the necessity of operative measures.

5 Treatment with infra red rays is valuable both before and after operative measures.

6 The modern tendency is towards conservative treatment. After shaving the hairy parts the whole of the carbuncle and several inches of surrounding healthy skin is covered with Elastoplast which is only changed when soiled by discharge or elevated from the skin so that it no longer acts as a local splint. This should be supplemented by the administration of Sulphathiazole, or if this is not available, Sulphapyridine.

GENERAL TREATMENT, see Boils, page 43

CEREBRAL ABSCESS

This includes extra-dural, subdural and intra cerebral collections of pus, which may be either acute or chronic in their manifestations. Acute intra-cerebral abscess may be regarded as a suppurative meningo-encephalitis. The treatment is surgical, but those cases of intra cerebral abscess which are encapsulated have a better prognosis than the unlocalized type of suppurative encephalitis. It follows that early operation is not always advisable. Papilloedema is more likely to be observed in the chronic type of abscess than in the acute form and may be a guide to the best time to operate.

CHICKEN-POX (Varicella)

Incubation period, about 14 days

Isolation period until all scabs especially those on the scalp have separated (about 3 weeks)

Quarantine period 21 days

The disease is usually mild and requires no treatment except a light diet for the first few days and confinement to bed until all the vesicles have become scabs. In younger children scratching should be prevented by splinting the arms. Irritation may be allayed by dusting powders by moistening the skin with 2% Carbolic lotion or Carbolyzed oil (1 in 10).

In the gangrenous type twice daily baths to which Boric Acid (1 oz. to a gallon) has been added are useful and hot boric fomentations may be applied. At a later stage the lesions may be treated with Zinc Boric or other antiseptic ointments.

CHILBLAINS

Any of the following may be applied to *unbroken chilblains* after soaking the affected areas in equal parts of hot water and Hydrogen Peroxide (10 vols) for 10 minutes.

1 Tincture of Iodine or Iodine Ointment or a 2% solution of Picric Acid in Methylated Spirit

2 Balsam of Peru used as a paint

3 Ichthyol ointment 10%

4 Menthol ointment e.g.

R. Menthol	gr 15
Paraff. Mollis.	dr 3
Paraff. Liq.	ad 1 oz.

5 As a liniment

R. Ol. Cajuputi	dr 1
Tinct. Capsici Fort.	dr 1
Tinct. Cannabis Ind.	dr 1
Spirit. Camphorae	ad 2 oz.

Whenever possible vigorous friction is of value in stimulating the circulation.

When ulceration has occurred :

- | | | | | | | |
|----|-----------------------|---|---|---|-----|---|
| 1. | R Tinct. Benzoin. Co. | . | . | . | dr. | 2 |
| | Lanolin | . | . | . | dr. | 4 |
| | Ungt. Zinci. Ox. | . | . | . | oz. | 1 |
| | Misce. ft. ungt. | | | | | |
| 2 | R Ichthyol | . | . | . | dr. | 1 |
| | Lanolin | . | . | . | dr | 4 |

If healing is very slow try.

1. Ungt. Resinæ B.P.C. (Camphor 1 to 3 grains may be added to each oz. if desired).

2. Massage, high-frequency, or general ultra-violet rays.

For internal administration.

1. Calcium Lactate, 10 to 20 grains, t d s, Kalzana, or Calcium in some other form. The addition of 1 grain of Thyroid at night is sometimes of value

2. Cod-liver Oil or Vitamin D preparations are also useful in some cases.

3. A combination of Calcium and Vitamin D may be given by three to six injections of Colloldal Calcium with Ostelin (Glaxo), 1 c.c., or in less severe cases, as Ostocalcium, 1 tablet, t.d.s, throughout the cold period.

4. French Tincture of Iodine, 5 minims, or Lugol's Iodine, 10 minims, in milk three times a day, especially in obese sub-thyroid types.

5. Injections of Acetylcholine have been employed.

The hands should be kept warm and for this purpose fur-lined gloves are best.

CHOLECYSTITIS

For clinical purposes cases of cholecystitis may be divided into three main groups :

I. Acute (often suppurative).

II. Subacute (catarrhal)

III. Chronic (often associated with gall-stones)

I. Acute Cholecystitis.

In this type, which may be suppurative and proceed to local gangrene and perforation, surgical treatment is usually

indicated, although early operation is not so imperative as in acute appendicitis. In fact, many cases can be tided over the most acute stage so that cholecystectomy can be performed when the temperature has subsided. This delay should only be permitted if satisfactory improvement occurs within 24 to 36 hours and there is no increase in the constitutional disturbance or indication that local peritonitis is spreading.

The treatment during this period consists of keeping the patient in bed, giving nothing but water by mouth, and injections of Morphia for pain. Tinct. Belladonnæ, m 10-15, is of value. Hot water bottles, fomentations or Antiphlogistine to the abdomen may also be used. Vomiting may be relieved by Bismuth, Chloretone or dilute Hydrocyanic Acid.

The treatment of acute cholecystitis with Sulphanilamide would appear to be rational.

II and III Subacute and Chronic Cholecystitis

It is often of value to secure for examination a specimen of bile in these cases. This may be obtained by swallowing a Ryle's fractional test-meal tube to the 23 inch mark first thing in the morning, washing out the stomach with sterile water and then permitting the tube to be passed to the 28 inch mark. The patient is then instructed to lie on his right side. The recovery of a little clear or bile stained alkaline or neutral fluid, in about half an hour indicates that the tube is in the duodenum. This is also washed out with sterile water and 2 to 4 drachms of 33½% Magnesium Sulphate solution are injected, a procedure which causes relaxation of the sphincter of the common bile duct and a flow of bile, which can then be aspirated and examined for bacteria, pus cells, etc.

TREATMENT

1 *Diet* A low fat, cholesterol free diet is indicated. The following articles should therefore be excluded. Eggs, cream, cheese, kidney, liver, sweetbread, duck, meat fat, suet pork, sausages. Butter should be reduced in amount and milk skimmed.

2 Biliary Antiseptics

Hexamine is advised as a biliary antiseptic and may be given in large doses without irritating the bladder provided the urine is kept alkaline. Hurst suggests

- | | |
|--|----------------------------------|
| (a) Hexamine, 80 to 100 grains, t d s | |
| (b) Sodium Bicarbonate }
Sodium Citrate } | of each, 60 to 100 grains, t d s |

The alkali should be given alone for the first 2 days and the dose adjusted so that the urine is constantly alkaline. The combined mixture of alkalis and Hexamine can then be given in 2 oz. of water after breakfast, after tea and last thing at night after a glass of milk and continued until the symptoms have disappeared. If any irritability of the bladder occurs during the treatment, the Hexamine should be omitted for a day or two and then recommenced with a smaller dose or the amount of alkali increased.

As an alternative measure, Sodium Salicylate 20 grains or Aspirin, 10 to 20 grains may be given three times a day. This may also be employed after treatment with Hexamine has been concluded. (NB—The Salicylates are probably less effective than Hexamine.)

3 Biliary Drainage

1 Olive Oil (a vegetable fat) $\frac{1}{2}$ oz. should be taken three times a day a quarter of an hour before meals.

2. Magnesium Sulphate, in a dose not sufficient to cause marked looseness of the bowels, should be given in concentrated solution on waking and the patient should lie on the right side. In severe cases the action of Magnesium Sulphate in producing biliary drainage may be increased by injecting 1 c.c. of Pituitrin a quarter of an hour earlier.

4 Septic foci should be eradicated.

5 In suitable cases, spa treatment may be considered, e.g. Harrogate.

6 SURGERY. Failure of medical treatment and the presence of gall stones are indications for operation which, however, should be preceded by a course of Hexamine whenever possible.

anæmia (hypo chromic, hyper chromic or erythroblastic in type), disturbance of calcium metabolism with latent or manifest tetany, changes in the bones (osteoporosis, osteomalacia or rickets in character), defective growth and infantilism in children

The main points in treatment, which is usually of long duration, are

1 A low fat diet The fat must be reduced sufficiently to control the steatorrhœa Skimmed milk should be used, Casein and bananas are useful additions to the menu

2 The anæmia must be adequately treated with iron by mouth, liver by injection or blood transfusion, according to the type present and its severity (see page 7)

3 Calcium Lactate should be administered by mouth in doses of not less than 120 grains daily If the blood calcium is very low or tetany be present, Calcium Gluconate or Lævulinate may be given by intramuscular or intravenous injection

4 Marmite and a preparation of Vitamin D should be taken regularly

COLIC, BILIARY

The patient should be put to bed as soon as possible and remain there until tenderness over the gall bladder has subsided Hot applications may be applied to the epigastrium and hot water sipped In milder attacks, a hot bath (110° F), provided the patient is under observation, is useful

Severe pain requires Morphine, $\frac{1}{2}$ grain, with Atropine, $\frac{1}{32}$ to $1\frac{1}{32}$ grain, while in some instances Adrenalin is said to give relief

In exceptional cases inhalations of Chloroform may be given

The intravenous injection of 15 c.c. of 5% Calcium Gluconate given slowly (5 minutes) may be tried and may be followed by Tinct Belladonnæ, m 10-15, t.d.s.

Trasentin (Ciba) is also said to be of value (see page 295)

Stimulants such as Nikethamide (Coramine), or Leptazol (Cardiazol) may be required for collapse

COLIC, RENAL (see page 295)

COLITIS, ULCERATIVE

Unfortunately it is not possible at the present time to be dogmatic with regard to the treatment of this most serious condition, which may appear as acute, subacute and chronic or relapsing types. There are several reputable schools of thought, each with some success to its credit. Certain principles, however, are common to all.

1 *Rest* Rest in bed is essential until the number of stools has been reduced to three per diem, often for a period of several months.

2 *Warmth* Additional blankets, hot-water bottles, woollen stockings and a woollen coat with sleeves to the wrists should be provided.

3 *Fluid* This should be given by the mouth in large quantities, e.g. weak tea, water, soda water flavoured with lemon if desired. 2 oz may be taken every half hour during the acute stages.

4 *Diet* The main points are that it should produce a small non irritating residue and at the same time be as nutritious and easily digestible as possible. Feeds should be given in small amounts about every 3 hours in the acute stages and consist of bread, toast, biscuits, butter, eggs, fish, meat extracts, custard, simple milk puddings, milk (total 1½ pints), sugar, barley sugar, grapes (without skins or pips), strained orange juice, plain chocolate. Carefully strained purees of spinach or potato may be given later. A mixed vitamin preparation may be added with advantage. Nickel Pectinate has been recommended for checking diarrhoea (Available as Nipectin Lally, in doses of 1-2 oz, three times a day, in cereals, soup or milk).

Meat, vegetables, fruit, excess of milk and fats should be forbidden.

The extent to which *local treatment* with colon lavage and enemata should be employed is a matter of dispute. (A) Tidy recommends treatment in three stages

1 *Starch and Opium Enemata* (3 to 4 weeks)

1½ oz Starch is rubbed into a paste with 4 oz of water. This is added to 16 oz of boiling water and the whole raised to the boil again. When cool 2 to 4 oz of mucilage are required for each enema to which 20 to 40 minims of Tinct. Op. are added. The enema is given with a funnel and catheter introduced into the rectum for 2 inches and should be retained as long as possible. If symptoms of collapse occur the dose of Tinct. Op. should be reduced to 10 minims. The first few enemata should be given at night in order to obtain rest but not more than three should be given consecutively and not more than five per week. In the course of 2 or 3 weeks the number of stools may be reduced by half.

2 *Simple Colon Washes* (3 to 6 months)

When the number of stools has been reduced to half (e.g. 5) lavage with saline dr 1 to 1 pint or Sodium Bicarbonate dr 2 to 1 pint should be commenced and given on alternate days at a temperature of 99°F. A tube and funnel should be used and elevated not more than 12 inches above the buttocks. Two pints are injected at the rate of a pint in 15 minutes. The patient may be placed on his back or in the knee elbow position and encouraged to retain the fluid for 15 minutes. This is continued for several months. An increase in the number of stools needs temporary return to Starch and Opium enemata.

3 *Medicated Enemata* (2 to 3 months)

When the stools are consistently less than five per diem medicated enemata six per fortnight on alternate days followed by a week's rest may be given in the following way. Give a simple colon wash-out and 2 hours later follow with 2½ oz of normal saline containing 20 grains of Albargin. This should be retained for 5 to 15 minutes.

- (B) Hurst recommends daily lavage from the start with
1. Tannic Acid (1 or 2 grains to 1 oz), or
 - 2 Hydrogen Peroxide, 10 vols (dr 2 to 1 pint)
- The solution should be retained for 5 minutes in the first place and later for 30 minutes

- (C) Cod liver Oil enemata have also been tried, commencing with 2 to 3 oz, increasing to 8 oz, after the initial symptoms and severe diarrhoea have subsided. The oil should be retained for several hours

Drugs by Mouth Powdered Charcoal or Kaolin, $\frac{1}{2}$ to 1 oz twice daily, absorb gas and diminish colic, flatulence and offensiveness of the stools. Mist Creta (B P C) or Bismuth Salicylate, 30 grains, may be given if desired. In view of the protracted nature of the disease Morphia is contra indicated except as Tinct Opi in enemata, but occasionally Tinct Opi Camph, dr 1, or Codeine, gr $\frac{1}{2}$ -1, may be used to allay colic

Serum Therapy Hurst advocates the use of intravenous injections of polyvalent anti dysentery serum. A typical course would be 25, 50, 50, 75, 75, 100, 100, 100 c c on successive days. There is no doubt that in some instances this is followed by brilliant results. The blood disappears from the stools, which are markedly reduced in numbers in a few weeks. In other cases, the results are equally disappointing. This form of therapy is most likely to be successful if given early in severe cases.

Vaccines Success is reported from the use of a vaccine of Bagen's diplococcus in America, but the results in this country have, on the whole, been disappointing.

Colonic Ionization, with $\frac{1}{2}$ to 1% solution of Zinc Sulphate, has been employed and is probably of most use in chronic and relapsing cases.

Other Measures If achlorhydria be present, Acid. Hydrochlor Dil may be given before meals and continued permanently after the patient has recovered from the acute attack. Blood transfusion is indicated for anæmia and often has a beneficial effect on the disease. Repeated small transfusions of 200 c c are most useful. Improve-

ment is sometimes obtained by giving full doses of Iron and Liver therapy has also been employed

The value of Sulphonamides is not fully established but in such a serious disease courses of Sulphathiazole or Sulphaguanidine are well worth a trial

When recovery has taken place Liquid Paraffin should be taken in order to keep the stools soft

In some cases healing of the ulcers is followed by polyposis of the colon which has been known to become malignant Polyposis should be treated by deep X ray therapy provided that no active ulceration is present

In doubtful cases the diagnosis should be confirmed by sigmoidoscopy Occasional repetition of this procedure enables the progress of the disease to be watched and the final condition of the mucous membrane observed

SURGICAL TREATMENT The main indications are (1) Failure to improve beyond a certain point with efficient medical treatment (2) Incontinence of faeces and various other complications such as fistula If the decision to operate is made it is evident that good results cannot be expected if the patient is going rapidly downhill in spite of medical treatment

The operation of choice is terminal ileostomy with implantation of the proximal and distal portions of the ileum into separate incisions in the abdominal wall In some cases it is possible to restore the continuity of the intestine but the appropriate time is a difficult decision

The operation of appendicostomy is designed for irrigation of the colon from above It is a relatively minor procedure which may be of value in cases in which ileostomy is not considered advisable When performed the appendix should not be opened until the skin wound has healed and closure is inadvisable until the patient has been free from symptoms for 1 year without treatment

COMA

Whenever possible the history should be obtained with special reference to the following facts

- 1 Previous history of disease e.g. nephritis or diabetes

- 2 Previous history of similar attacks, e.g. epilepsy
- 3 The mode of onset of coma, i.e. sudden or gradual
- 4 The presence of any drugs or poisons on or near the patient

General Examination

The presence or absence of cyanosis, stertorous breathing, injury about the head and bleeding from the nose, ears or mouth should be noted. Acetone or alcohol may be detected in the breath although the presence of the latter does not necessarily indicate intoxication as it may have been administered by a well meaning onlooker. The staining caused by corrosive poisons may be seen about the mouth or lips.

Examination for Paralysis

The state of the limbs should be compared with each other. The eyes must be examined for the presence of squints and the state of the pupils and their reaction to light ascertained.

Other Points

The pulse and respiration rates and the temperature should be recorded. A specimen of urine should be obtained as soon as possible, if necessary by catheterization, and tested in the routine manner, special note being made of the presence of acetone, sugar or albumin.

The optic discs should be examined and the blood-pressure estimated. A lumbar puncture, with subsequent pathological examination of the fluid, will be necessary in the majority of cases in which the cause is not obvious. By this means conditions such as subarachnoid hæmorrhage and unsuspected cerebral syphilis may be discovered.

In cases of suspected poisoning all vomitus must be saved, together with any bottles which may have contained poison.

TREATMENT OF COMA

Prior to the discovery of the cause, "first aid" treatment may be given. Whenever possible the patient should be placed on his side, for in this position the tongue is

less liable to fall back and obstruct respiration and if vomiting takes place the chance of food being aspirated into the larynx is diminished. False teeth should be removed the clothing about the neck loosened and the boots removed. Blankets and hot bottles the latter being properly protected so that there is no risk of burning the patient may be applied.

If coma is prolonged the nursing of the case is of utmost importance. The position of the patient should be changed from time to time in order to avoid congestion of the lungs while great care must be taken of the skin over pressure points. Nasal feeding is generally necessary in such cases and may be supplemented by rectal salines. The bladder must be watched carefully and enemata may be required for constipation.

(See also Apoplexy Diabetes Poisoning Uremia etc.)

CONSTIPATION

The temporary constipation associated with acute febrile illnesses and constitutional disorders necessitating rest in bed, requires little comment. Numerous aperients are available and any one suited to the particular case may be given. Castor Oil or Calomel 3 grains followed by a morning saline are often employed at the onset of an acute condition. Constipation of several days duration in a case of this type is best dealt with by an enema subsequent regularity of action being obtained by the administration of morning salines or Senna Cascara or one of the well known proprietary preparations at night. Care must be taken however that the administration of aperients to ill or bed ridden patients is not overdone. A daily action is not always essential and very often enemata on alternate mornings are less disturbing to the patient. Under no circumstances should an aperient be given if the case is likely to be one of appendicitis.

Cases are sometimes seen with acute constipation of several days duration unaccompanied by the signs of intestinal obstruction although there may have been no response to ordinary or turpentine enemata and aperients.

In such instances Acetylcholine, 0.1 gram, or Carbachol injected subcutaneously or intramuscularly every 2 to 4 hours for several doses is often effective. Similar treatment is also useful in cases of paralytic ileus and post-operative distension, in which it may be necessary to give injections hourly for six doses in order to obtain the desired effect.

Apertients are necessary in certain diseases such as chronic nephritis, chronic heart disease, hypertension and chlorosis in which the condition may be aggravated by the accompanying constipation, also when a soft stool is necessitated by painful defaecation, e.g. piles, anal fissure.

Habitual Constipation

The treatment of this state must in the first place be directed to the cause. It may be due to delay in the passage of the intestinal contents in the small or large bowel (intestinal stasis) resulting from deficient fluid intake, a low residue diet, lack of exercise, impaired excitability of the intestinal mucosa following the prolonged use of purgatives or ductless gland deficiency. The commonest variety, however, is *dyschezia* in which delay in emptying the rectum is a habit resulting in over stretching and loss of tone of the walls of the cavity with the consequent accumulation of hard faecal matter which ceases to provoke the normal desire to defaecate. *Dyschezia* may also be produced by weakness of the abdominal muscles or of the levator ani, the latter having been damaged by parturition.

Full investigation of a case of chronic constipation includes a rectal examination and a complete X ray of the alimentary tract after a barium meal.

The following are the main principles of TREATMENT

- 1 Adequate exercise, out of doors if possible
- 2 Abdominal exercises and massage
- 3 Plenty of fluids, e.g. $2\frac{1}{2}$ to 3 pints daily, a glass of water being taken before meals and $\frac{1}{2}$ to 1 pint on rising
- 4 Cultivation of the habit of a regular visit to the lavatory every morning after breakfast or some other regular hour convenient to the routine life of the individual. In attempting to re-educate the bowel to regularity of action

this visit and effort must be made whether the desire to defæcate be present or not. If at any other time fullness of the rectum is noticed, the bowel should be emptied.

5 A diet suitable in quantity and quality must be taken. An increased proportion of vegetable foods should be included. Fresh fruit should be taken two or three times a day, and green vegetables or salad with lunch and dinner. Porridge and stewed prunes or figs should be part of the breakfast menu and wholemeal bread used instead of white. China tea is less astringent than Indian and is therefore preferable.

6 *Enemata* are valuable in *dyschezia* and should at first take the place of aperients in the management of this condition. Their special use is at the commencement of treatment when it is desired to re-educate normal bowel rhythm and to restore the tone of the rectum. A simple enema of warm water, 10 oz., given if possible, after breakfast by the patient himself, and gradually reduced in quantity is preferable. Alternatively a Glycerin enema, dr 1 to 2, may be given in the same way. Later, a Glycerin suppository may be tried and finally an attempt made to do without any aid. (*N.B.*—The hygroscopic action of glycerin on the mucosa of the rectum renders its prolonged use highly undesirable.)

7 Aperients are so numerous that few can be mentioned individually. If motions tend to be hard Liquid Paraffin is especially useful and may be combined with Agar agar. The latter alone or one of the preparations which swell in the presence of water are useful means of providing "rough age," which stimulates peristaltic action. Liquid Paraffin is best taken at night, or night and morning and apart from meals, for it is said to interfere with the absorption of certain vitamins. Proprietary formulæ containing intestinal extracts, e.g. Taxol, are found beneficial by some and have only a mild laxative action. Vegetable aperients, of which Senna, Cascara and Aloe are the most popular, have their place in therapeutics, and may be given in pill or liquid form. In any case an attempt should be made to cure the condition without the use of drugs, and if they

are unavoidable every effort should be made to reduce the frequency and power of the preparation employed as soon as possible, and eventually to dispense with their use entirely.

In the spasmodic type of constipation due to a "*spastic colon*," foods producing an excess of "roughage" should be avoided. Abdominal massage should be given and Liquid Paraffin taken in suitable doses. A Belladonna pill (Dry extract, $\frac{1}{4}$ to $\frac{1}{2}$ grain) may be given night and morning. An Olive Oil enema may be given at night. 4 to 8 oz. of warm Olive Oil are introduced slowly and an attempt is made to retain it throughout the night. It is advisable to prevent soiling the bedclothes by placing a towel over the anus.

In elderly patients, the presence of hard scybala in the colon may result in diarrhoea. In such instances, saline colon lavage followed by a dose of Castor Oil or other purgative is effective.

Constipation in Children

Apart from its occurrence in conditions such as pyloric stenosis, Hirschsprung's disease, etc., constipation in infants may be due to over feeding, under feeding or to some defect in the amount of sugar, fat or protein in the diet or to deficiency in the quantity of fluid taken. When necessary, water or barley water may be given between feeds.

If constipation is allowed to continue there is a danger of the bowel becoming accustomed to overloading with consequent loss of sensibility and tone, so that an attempt should be made to deal with the trouble as soon as possible. Gentle, systematic massage along the course of the colon can be carried out by the mother or nurse. An evacuation can often be induced by the introduction of a small soap suppository. Watery injections are best avoided as they may produce dilatation of the bowel and loss of tone, but a glycerin enema or suppository may be used when quick relief is required.

For infants, Hydrarg. cum Creta (1 grain for a child of 9 months to a year) is a suitable drug or one of the following mixtures may be given (dose for child of 1 year)

R Tinct Rhei Co	m. 15
Sodu Bicarb	gr 5
Syrup Zinzibers	m 15
Aq Carui	ad 1 dr
R Tinct Aloes	m. 3
Tinct Belladonnæ	m. 2
Syrup Sennæ	m. 15
Aq Menth. Pip	ad 1 dr

A teaspoonful of Olive Oil, Liquid Paraffin or fluid Magnesia may be tried.

For older children Syrup of Senna or Syrup of Figs are useful. Compound Liquorice Powder Sulphur 10 grains or small doses of a saline e.g. Soda Sulph. 10 grains may also be employed if desired.

In cases of chronic constipation the use of aperients such as Magnolax Taxol Cascara or Senna may be necessary for a period in order to establish a regular bowel habit.

CORNS (Clavus)

1 Ill fitting footwear must be avoided and any obvious deformity of the feet corrected.

2 The corn should be pared as much as possible without causing bleeding then (a) softened with corn paint

R Acid Salicylic.	dr 1
Extr Cannabis Indicæ	gr 10
Collodu Flexilis	dr 6
Ætheris	dr 2

or R Acid. Salicylic.	dr 1
Collodu Flex.	oz 1

Remove the central core after a few days or

(b) Destroy the central core after paring with Glacial Acetic Acid applied on a match stick care being taken that the surrounding skin is not touched.

Soft Corns between the Toes

1 Apply Ungt Acid. Salicyl. 3% twice daily and place a pad of cotton wool between the toes

2 If the feet are very moist, wash and change the socks twice daily and apply a dusting powder, e.g. Talc, Boric Acid and Starch, equal parts, or Poly Acid Salicyl Co (B.P.C.)

CORONARY ARTERY THROMBOSIS

The main types of the condition are

1 Sudden death or death following the rapid onset of heart failure

2 Pain, either paroxysmal or prolonged for some hours, radiating from the precordium

3 Abdominal symptoms simulating gall bladder disease and a degree of collapse which may resemble perforated gastric ulcer

It is usually associated with a fall of blood pressure and, after a few days, by pyrexia pericardial friction and leucocytosis

CASE MANAGEMENT

The patient must be put to bed for a total period of not less than 6 to 8 weeks and during the first fortnight should avoid every unnecessary movement and mental activity. Subsequent progress must be slow. Blood pressure readings should be taken at intervals and an electrocardiogram, if obtainable, is of value in confirming the diagnosis, but on no account should the patient be moved from bed for this to be taken.

TREATMENT OF THE ATTACK

For pain and restlessness, give Morphine, $\frac{1}{4}$ to $\frac{1}{2}$ grain. A mixture of Chloral 15 grains, and Potassium Bromide, 10 grains may be used for restlessness alone. Quinidine Sulphate, 3 to 5 grains, t.i.d., has sometimes been given for 1 to 2 weeks as a prophylactic against ventricular fibrillation which is a frequent cause of death. Digitalis is only indicated when signs of congestive heart failure supervene. Atropine, $\frac{1}{16}$ grain, may be given when severe oedema of the lungs is present and venesection (15 oz.) may then be performed. If severe shock be present

the head should be kept low and hot bottles and blankets hot drinks e.g. hot coffee should be given together with an injection of 5 minims of Adrenalin (1 in 1000)

A Belladonna plaster applied to the precordium may help to relieve any residual pain. If pain is very severe and Morphine ineffective the injection of 1% Stovaine in water into the hypersensitive cutaneous area has been recommended.

After Treatment

During the first few weeks a mixture containing 10 to 15 grains of Ammonium Bromide may be given three times a day. Having been confined to bed for 6 to 8 weeks the patient should rest for a further period of 4 months. During the next 6 months a little sedentary work may be undertaken in most cases. The amount of physical exertion subsequently allowed must be judged on the efficiency of the heart in individual cases, the patient always being warned to avoid dyspepsia, fatigue and sudden exertion. He should have regular periods of rest during the day. Alcohol and excess of tobacco should be avoided.

CRETINISM

Treatment is similar to that required for myxœdema. Thyroid must be given in suitable doses for the rest of the patient's life. The amount of improvement in the physical and mental states varies and although as a rule the earlier treatment is commenced the better the results, a guarded opinion should be given in the first place.

Commencing with Thyroid $\frac{1}{4}$ grain b.d. in milk the dose must be increased gradually according to the demands of the case. Many cretins are sensitive to Thyroid and evidence of over-dosage such as vomiting, diarrhoea or loss of weight is an indication to omit the drug temporarily and to recommence with a much smaller dose. Unlike cases of myxœdema the cretin should gain weight during treatment.

CYSTITIS

I Acute Cystitis

The general management of the case is similar to that of pyelitis (page 288) i.e. light diet, copious fluids and avoidance of highly seasoned foods, sauces, condiments and alcohol. Hot fomentations or Antiphlogistine may be applied to the supra pubic region and hot sitz baths taken for 15 minutes three times a day. For severe pain a suppository of Morphia and Belladonna (Morphia $\frac{1}{2}$ to $\frac{1}{4}$ grain, Extr. Belladonnæ 1 grain) may be given.

Cases divide themselves into two groups

(a) Those with acid urine

(b) Those with alkaline urine

(a) *Acid Cystitis* The urine must be rendered alkaline.

The dosage of alkali administered should be sufficient to maintain an alkaline reaction in the urine during the whole of the 24 hours for a period of at least 10 days. The initial dose required for this purpose can generally be reduced after the first few days. The addition of Hyoscyamus or Belladonna acts as a sedative to the bladder and diminishes the irritability.

- | | | |
|---|---|------------------------|
| 1 | R. Potassii Citratis | gr 30 to 60 |
| | Aq. Menth. Pip. | ad 1 oz |
| | Two, three or four hourly until the urine is alkaline | |
| 2 | R. Potassii Citratis | gr 30 |
| | Tinct. Hyoscyami | m 30 |
| | Spt. Chloroformi | m 10 |
| | Infus. Buchu | ad 1 oz, every 4 hours |
| 3 | R. Potassii Citratis | gr 30 |
| | Potassii Bicarb. | gr 30 |
| | Magnes. Carb. Pond. | gr 20 |
| | Aq. Menth. Pip. | ad 1 oz every 4 hours |
| 4 | R. Potassii Citratis | gr 30 |
| | Tinct. Hyoscyami | m 30 |
| | Infus. Uvae Ursi | ad 1 oz every 4 hours |

(b) *Alkaline Cystitis* The urine must be rendered acid and urinary antiseptics given e.g. Hexamine (see Pyelitis, page 290).

or	Acidi Borici	gr	10
	Nepenthe	m	10
	Extr Glycyrrhiz Liq	dr	1
	Aq	ad 1 oz	every 4 hours

As the symptoms subside it may be necessary to follow the treatment employed for chronic cystitis

II Chronic Cystitis

Any underlying cause must be carefully sought and for this purpose, estimations of the residual urine X ray and cystoscopy may be necessary

The commonest causes are (a) enlarged prostate (b) stone or foreign body in the bladder (c) atony, dilatation or diverticulum (d) stricture (e) associated pyelitis (f) tuberculosis

Depending on the reaction of the urine it is generally advisable to continue either with the acid or alkaline mixture Capsules of Sandal wood Oil 10 minims or Creosote 5 minims may be given three times a day If pain is severe relief may be obtained by injecting 4 oz of sterile Liquid Paraffin from a syringe through a catheter and retaining it in the bladder

Lavage is of great value in treatment after acute symptoms have subsided and may be given daily in the first instance Any of the following solutions may be used 2 pints of fluid at a temperature of 110° F being placed in a douche can fixed about 3 feet above the level of the patient (a) Sodium Bicarbonate (1 to 2% in acid cystitis) (b) Dilute Acetic Acid (1%, in alkaline cystitis) (c) Oxycyanide of Mercury (1 in 4000) (d) Potassium Permanganate (1 in 4000) (e) Sterile saline followed by Silver Nitrate (1 in 10 000 increasing up to 1 in 2000)

Weekly instillations of half an ounce of 10% Collargol into an empty bladder are sometimes useful in refractory cases

Vaccines may be employed in cases due to B. Coli infection

Tuberculous cystitis requires special consideration for details of which larger works must be consulted Pain may, however sometimes be relieved by instillation of

Liquid Paraffin and in some cases resection of the presacral nerve may be considered.

Mandelic Acid therapy and Sulphonamides may also be used in cystitis (see Pyelitis, page 289).

DEBILITY, GENERAL

In the first place an attempt must be made to discover and remove the underlying cause. A suitable holiday with adequate fresh air may be desirable. Any associated anæmia should be treated with iron: nourishing and easily digested food is necessary, and it may be advisable to stimulate the appetite by a mixture of the following type:

R	Extr. Nucis Vom. Lq.	m. 1
	Acid. Nitro hydrochlor. Dil.	m 10
	Infus. Gentian. Co	ad 1 oz. t.d.s., a.c.

One of the following tonics may be employed:

1. Syr. Ferri Phos. Co (BP.) . dr. $\frac{1}{2}$ to 1
2. Syr. Fern. Phos. cum Quina et Strychnina . dr $\frac{1}{2}$

3. R Syr. Ferri. Phos. Co. }
Syr. Hypophos. Co. } aa dr. 1
Syr. Glycerophos Co }
Aq ad 1 oz. t.d.s.

4. More expensive but excellent proprietary preparations include: Neuro-Phosphates (Eskay Brand), dose = dr. 2. Minadex.

DELIRIUM TREMENS

One of the most difficult points to decide in the treatment of this condition is whether to stop the consumption of alcohol abruptly or whether to reduce gradually the daily dose. The first course should be adopted in the case of a first attack in a young subject. On the other hand, the latter is generally advisable if the patient be old or weak or seriously ill from some other condition. The aim of treatment is to quieten the excitement and to procure sleep.

2 Lotio Calaminæ e g

R Calaminæ Præparat	gr 15 to 30
Zinci Oxidi	gr 15 to 20
Liq Calcis	ad 1 oz

The following has the advantage that when dabbed on to the face does not tend to cake into hard crusts

R Calaminæ Præparat	oz $\frac{1}{2}$
Spt Vini Rect	oz $\frac{1}{2}$
Aq Rosæ	ad 10 oz

3 Silver Nitrate lotion $\frac{1}{2}\%$ may be used when the irritation is intense. It should be covered with water proof material to prevent evaporation and changed every hour

If much sepsis is present a mild antiseptic lotion may be tried at first e g

- 1 1 in 1000 Acriflavine or Proflavine
- 2 1% Picric Acid in water
- 3 1 in 4000 Perchloride of Mercury

In the *subacute stages* when the skin tends to become dry, only preparations are advisable e g

- 1 Lin Calaminæ Co (B P C)
- 2 R Calaminæ Præparat gr 30
Liq Calcis oz $\frac{1}{2}$
Ol Olivæ ad 1 oz
Ichthyol (5%) may be added later if desired.
- 3 R Zinci Oxidi } aa oz 1
Kaolin }
Glycerini oz $\frac{1}{2}$
Aq ad oz 12

4 At a later stage Lassar's paste is especially useful, or

R Zinci Oxidi	dr 2
Pulv Amyh	dr 2
Paraff Moll Alb	oz $\frac{1}{2}$

In the *chronic stages*, more stimulating substances should be included in the form of ointments e g

- 1 R Hydrarg Ammon gr 20
Liq Picis Carb dr 2
Lanolini oz 1
Paraff Moll Flav oz 1

(Liq Plumbi Subacet Fort, dr 1 may be added)

2 Ungt Picis Carb (BPC)

3 Ungt Metallorum viz ¹ equal parts of Ungt ¹ Plumbi Subacetat Ungt Hydrarg Nit and Ungt Zinci

With marked hyperkeratosis an ointment containing 2 to 3% Salicylic Acid may be used, or

R ¹ Acid Salicyl	gr 30
Acid Carbol (Phenols)	gr 30
Paraff Moll. Alb	ad 1 oz.

¹ In *seborrhæic cases* the following is useful

R Resorcin	gr 20
Glycerini	dr $\frac{1}{2}$
Paraffin Moll.	oz $\frac{1}{2}$
Ungt Zinci	ad 2 oz

In acute cases a light diet with milk as a basis is often necessary The following may be given by mouth

R Sodii Bicarb	gr 30
Sodii Cit	gr 30
Potass Cit	gr 20
Aq Menth. Pip	ad 1 oz t.i.d.

A semi vegetarian diet is often valuable in chronic cases and Liq Arsenicals may be given by mouth Sometimes B Acidophilus emulsion is worth a trial Vitamin B preparations are said to be of value both in acute and chronic cases

Sleeplessness may require Bromides Chloral or one of the Barbiturates e.g. Phenobarbitone

DIABETES INSIPIDUS

It is important to exclude chronic nephritis pituitary tumour and syphilis (Wassermann reaction) Suitable anti syphilitic treatment is required if the latter is positive

The fluid intake should be reduced somewhat but not below the urinary output Diuretic substances such as tea coffee alcohol and also salt should be avoided

Injectons of Pitressin Tarmate in oil are valuable ¹ Pituitrin or Pitressin are less effective

Applications of X rays to the pituitary fossa have also been recommended

¹ *Lancet* 1943 i 260

DIABETES MELLITUS

For a full account of the treatment of this condition larger works must be consulted. The following is a brief outline of the general principles to be followed.

In order to obtain the maximum advantage from the advance in the treatment of this disease, it is essential for the patient to have some knowledge of the principles of treatment employed and his intelligent co-operation will be of great assistance to the medical attendant¹

CASE MANAGEMENT

1 The discovery of sugar in the urine does not in itself justify the diagnosis of diabetes mellitus. A full consideration of all the circumstances should be taken into account and a blood sugar and glucose tolerance test may be necessary to establish the diagnosis.

2 A search should be made for any complications e.g. focal sepsis, phthisis, neuritis and retinitis. The cardiovascular system should be overhauled.

3 Benedict's test for sugar and Rothera's test for ketones should both be carried out. Fehling's test, though commonly used, is less reliable than the former and should only be employed if its limitations are appreciated.

N.B.—Rothera's test (1 in 200 000) is more delicate than the Fernic Chloride test (1 in 4000) for ketone bodies.

4 The care of the feet is most important. Regular visits to a chiropodist and the use of proper footwear will do much to reduce the incidence of perforating ulcer and gangrene.

PRINCIPLES OF TREATMENT

1 To supply a diet containing sufficient calories for the normal nutrition of the patient.

2 To allow as much variety as possible.

3 To prevent ketosis.

¹ Suitable books for the diabetic who is sufficiently educated to appreciate them are

(a) *Manual of Diabetes* J. J. Conybeare Oxford U.P. (6s. 6d.)

(b) *The Diabetic Life* R. D. Lawrence. Churchill. (9s.)

4 To keep the urine free from sugar and the blood sugar as low as is compatible with the comfort and general health of the patient (This is not necessarily the normal level of 120 mgm. per 100 cc of blood)

Diet

Caloric Value In the first place a basal requirement diet should be supplied. By giving this some indication of the carbohydrate tolerance of the patient can be obtained and subsequent modifications may be made to suit the individual case.

The average adult requires 12 to 15 calories per pound body weight. For purposes of calculation the predicted or optimum body weight should be employed, for in this way a thin patient obtains a slightly larger diet, while that of the obese will be reduced. Children require a diet relatively more liberal than adults to allow for growth.

8 stone	1680 calories
9 "	1800 "
10 "	2100 "
11 "	2300 "
12 "	2500 "

An additional 10% to 20% will be required if muscular work is to be performed. Women require about 10% less than men.

Prevention of Ketosis Excess of fat in the diet is dangerous, but the amount of carbohydrate now allowed is generally enough to prevent ketosis which will not develop if the diet conforms to the following formula

$$F < 2C + \frac{P}{2}$$

If a patient has ketosis a high carbohydrate diet and Insulin should be commenced at once.

PROTEIN 70 to 100 grams a day is sufficient

CARBOHYDRATE. The average diabetic should have not less than 100 grams per diem. As much as 200 to 250 grams may be given, but in such instances the amount of fat should be reduced so that $C > 2F$

TEST DIET This may be worked out on the following lines

1 gram of Carbohydrate	supplies 4 calories
1 Protein	4
1 Fat	9

A diet containing

Carbohydrate	145 grams	$\times 4 = 580$ cal
Protein	90	$\times 4 = 360$
Fat	90	$\times 9 = 810$
		<hr/> 1750 cal

may be made up in the following way

BREAKFAST

Tea or coffee		Eggs	2
Oatmeal	1 oz	Butter	$\frac{1}{2}$ oz
Bread	2 oz	Orange	1
Bacon	1 oz	(Carbohydrate = 60 grams)	

LUNCH

Meat	2½ oz	Bread	1 oz
Potatoes	1 oz	Butter	$\frac{1}{2}$ oz
Greens		Cheese	$\frac{1}{2}$ oz
		(Carbohydrate = 21 grams)	

TEA

Tea and milk

SUPPER

Vegetable Soup or Bovril		Bread	1 oz
Fish	2½ oz	Butter	$\frac{1}{2}$ oz
Potatoes	2 oz	Milk pudding	4 oz
Greens		(Carbohydrate = 55 grams)	

Milk 7 oz are allowed during the day together with green vegetables (5%) up to 12 oz. The latter are not taken into consideration in calculations (Each ounce contains 1 gm of carbohydrate and $\frac{1}{2}$ gm of protein and has a calorie value of 6)

It will be noticed that the bulk of the carbohydrate is concentrated in the morning and evening meals a useful consideration if Insulin is to be given

	Quantity	Carbo- hydrate	Fat	Protein	Calories
Eggs	2	0	12	12	50
Bacon	1 oz.	0	15	5	155
Meat	2½ oz.	0	12.5	20	193
Fish	2½ oz.	0	0	15	62
Butter	1½ oz.	0	37	0	337
Cheese	½ oz.	0	5	4	65
Oatmeal	1 oz.	20	0	5	120
Milk	7 oz.	10	7	7	140
Bread	4 oz.	60	1	12	360
Potatoes	3 oz.	18	0	3	90
Milk pudding	4 oz.	28	0	4	128
Orange	1	10	0	0	40
		146	89.5	87	1740

A diet of this type may be used as a starting point

Any variations can be made by reference to diet tables (page 372) so that the amount of carbohydrate remains constant

All portions should be weighed until the patient is thoroughly familiar with the amount he is permitted and can gauge it accurately. As a rule he should weigh all portions for the first week of treatment on one day a week for the next month and subsequently once a month.

Lawrence's line diet is also a convenient method with which to work.

In mild cases especially in the elderly it may be unnecessary to use Insulin. In such instances the carbohydrate may be reduced and the fat increased e.g.

Carbohydrate	60 gm	$\times 4 = 240$ cal	or	100 $\times 4 = 400$ cal.
Protein	90	$\times 4 = 360$		90 $\times 4 = 360$
Fat	120	$\times 9 = 1080$		100 $\times 9 = 900$

1680 cal

1660 cal

but under no circumstances should ketosis be permitted to develop

As a rule if glycosuria persists on a diet containing 100 grams of carbohydrate Insulin will be necessary

Having adjusted the diet to the calorie requirements of the patient Insulin may be commenced e.g. 10 to 20 units twice daily It should be increased daily or every other day by say 5 units at each dose until the patient becomes sugar free When the patient has been sugar free for a day or two an attempt should be made to reduce each dose by 5 units

If the case is a severe one and does not become sugar free on 40 to 50 units twice a day it may be found necessary to give three injections of Insulin e.g. 25 to 30 units t.d.s.

During the period of Insulin adjustment the urine should be tested before each meal In this way the dose of Insulin may be adjusted to the carbohydrate content of the respective feeds

It may be found possible to reduce the dose of Insulin after a period of treatment and this should always be borne in mind during the management of a case The occurrence of hypoglycæmia is a definite indication to reduce the dose

As a general rule the thin young adult type requires a high carbohydrate diet and Insulin The obese diabetic needs a lower carbohydrate diet on which the dose of Insulin may be reduced or even dispensed with in some cases

Protamine Zinc Insulin

This preparation is only sparingly soluble in the tissue fluids and therefore on account of its slow absorption allows of a more prolonged though slower action than ordinary Insulin In other words it does not produce the maximum lowering of the blood sugar until several hours after the injection

The main indication for its use is in cases requiring two or more injections of Insulin daily with the object of reducing the number of injections given It may be possible to achieve this by the use of Protamine Zinc

Insulin alone.* In other cases a supplementary dose of ordinary Insulin may be required. . . .

It is essential to study each case individually. Mild and moderately severe cases can often be controlled by one injection of Protamine Zinc Insulin given before breakfast each day. .

The ideal dose is one which will continue its action for 24 hours, maintaining a normal blood sugar level throughout the day without producing hypoglycæmia during the night. An attempt should be made to keep the early morning specimen of urine free from sugar, but there is often risk of producing hypoglycæmia if an effort is made to keep the urine secreted in the first three hours after breakfast entirely sugar-free.

New cases of diabetes may be started on this form of Insulin at once, but in old cases the transition from ordinary Insulin should proceed with care. In such cases a single morning dose of Protamine Zinc Insulin, 20% less than the total dose of ordinary Insulin previously given, should be tried. If morning urine tests show no sugar on three successive days, or if evidence of nocturnal hypoglycæmia is obtained, the dose should be reduced still further. On the other hand, this dose may be increased if necessary. The closest observation must be kept on the case until stabilisation is obtained, and it must be remembered that the effects of Protamine Zinc Insulin may be cumulative. .

If it is found impossible to control the case with a single dose of Protamine Zinc Insulin, an evening dose of the same substance or of ordinary Insulin may be commenced. As a rule, this should be considerably smaller than the morning dose. . . .

Diet: Care should be taken that the carbohydrate in the diet is suitably distributed. The action of Protamine Zinc Insulin is weakest in the morning, and therefore the breakfast content of carbohydrate should be low, e.g., breakfast 20%, lunch 40%, supper 40% of total daily carbohydrate. . . .

Further adjustment may be necessary* if there is a tendency to nocturnal hypoglycaemia

Protamine Zinc Insulin is supplied in two strengths containing 40 and 80 units per c.c. respectively. Care should be taken that the vial is shaken gently immediately before each dose is withdrawn in order to obtain even diffusion of the suspended matter and therefore a constant dose.

The hypoglycaemia symptoms due to Protamine Zinc Insulin are similar to those produced by ordinary Insulin but tend to be less severe more gradual in onset but often more prolonged. Occasionally symptoms appear with unexpected rapidity. Ordinary Insulin should be used for the immediate control of severe ketosis or diabetic coma.

The following is an example of a *high carbohydrate diet* consisting of carbohydrate 225 gm protein 85 gm and fat 85 gm supplying approximately 2000 calories

BREAKFAST

Tea or coffee with milk		2 eggs	(1 = 2 oz.)
Oatmeal	1½ oz	Butter	½ oz
White bread	2½ oz	1 Banana	(= 3 oz.)
Bacon	1 oz		

LUNCH

Meat	2 oz	White bread	1 oz
Potatoes	1½ oz	Cheese	½ oz
Green vegetables <i>ad lib</i>		Butter	½ oz

TEA

Tea with milk

SUPPER

Clear or vegetable soup		Milk pudding	8 oz
Fish	2 oz	Butter	½ oz
Green Vegetables <i>ad lib</i>		Cream	½ oz
Potatoes	3 oz	1 apple	(2 oz.)
White bread	1 oz	1 orange	(2½ oz.)

This diet includes 7 oz of milk daily

Indications for Insulin

- 1 Cases with low carbohydrate tolerance, e.g. below 100 gm. per day
- 2 Ketosis
- 3 Coma
- 4 During periods of infection, e.g. common cold, bronchitis, boils. Patients already on Insulin require a temporary increase in dosage during these periods
- 5 Operations
- 6 Phthisis or other complications

DIABETIC COMA (Hyperglycæmic)

This is an emergency and therapeutic measures must be instituted without delay. The main items of treatment are

- 1 To establish the diagnosis ✓
- 2 To combat ketosis ✓
- 3 To counteract dehydration ✓
- 4 To open the bowels ✓
- 5 To prevent or treat circulatory failure ✓

1 A specimen of urine must be obtained, by catheterization, if necessary. Acetone and sugar are present in the urine. (In very rare instances the latter may be absent.) Some albumin may be found. Specimens of urine will be required at intervals during the treatment of coma. The estimation of blood sugar is often valuable but is not essential. If blood is taken for examination a urea estimation should also be performed as a high figure is not infrequently obtained.

2 Give Insulin and Glucose. The latter may be administered by the stomach tube or intravenously. If circulatory failure be present the initial doses of both should be given by the intravenous route since there will be delay in absorption from the subcutaneous tissues.

Dosage Almost every case of coma requires 200 units of Insulin during the first 24 hours and as much as 300 to 400 units may be necessary.

An initial dose of 40 to 80 units of Insulin should be given by subcutaneous or intravenous injection. At the same time or as soon after as possible 1 oz. of Glucose should be given into the stomach or 20 c.c. of a 10% solution intravenously.

As a rule the blood sugar is sufficiently high to prevent any risk of hypoglycæmia from this initial dose. Subsequent injections of Insulin should be covered by an adequate amount of Glucose.

1 gram of glucose	=	1 unit of Insulin
or 1 oz.	=	28 units

Injectations of Insulin and administration of Glucose should be repeated every 1 to 3 hours (e.g. 28 units and 1 oz. Glucose) until the urine is sugar free, a specimen being tested before each injection. When the urine is sugar free the interval between the injections may be extended to 4 to 8 hours until the patient can be put on a suitable diet.

3 As a rule an initial intravenous injection of 1 pint of normal saline is advisable if dehydration be marked. Subsequently half strength normal saline (0.5%) may be given by mouth or normal saline per rectum, according to the demands of the case. An attempt should be made to get 3 pints of fluid into the patient during the first 6 hours. If too great an amount of fluid is introduced at one time there is a risk of producing pulmonary oedema and of putting a strain on the heart (see below 5).

4 Unless there is evidence of cardiac failure the bowels should be opened by an enema after the first injection of Insulin and Glucose. Alternatively 1 to 2 oz. of Castor Oil may be given by mouth or by the stomach tube if the latter has to be used to administer Glucose.

5 If circulatory failure be present it will be revealed by the coldness of the extremities, a weak pulse and low blood pressure. Dehydration is usually marked in these cases and is shown by the inelastic skin, dry mucous membranes and softness of the eyeball. In such instances the patient should be kept warm and quiet with the foot of the bed

raised Inhalations of oxygen may be necessary and injections of Camphor Nikethamide (Coramine) or Lep tazol (Cardiazol) may be given

In a case of this type it may be well to give the Insulin intravenously at the same time as 2 pints of 10% glucose in normal saline (Glucose 2 oz salt gr 80 in one pint) The latter must be given slowly and should take $1\frac{1}{2}$ hours

Blood transfusion has been suggested for desperate cases

Ketosis Any diabetic patient whose urine gives a positive ferrie chloride reaction is suffering from a severe degree of ketosis which may progress rapidly into coma Treatment should be commenced immediately by giving 50 grams of Glucose in lemonade and 20 units of Insulin every three hours until the ferric chloride reaction becomes negative

HYPOGLYCÆMIA

It is important to warn every patient who is having Insulin of the nature of the symptoms which may occur in this condition, and to remember that an adequate amount of carbohydrate must be taken in the evening meal in order to prevent hypoglycæmia developing during sleep

1 *Mild Cases* The juice of an orange two lumps of sugar or some barley sugar may be taken

2 *Severe Cases* 10 grams of Glucose in 50 c c of normal saline should be given intravenously Alternatively, 50 grams of Glucose or 10 lumps of sugar dissolved in water may be given by the stomach tube

3 A subcutaneous or intramuscular injection of 1 c c. of Adrenalin or Pituitrin may be given in an emergency or while preparations are being made to administer sugar This has the effect of mobilizing the liver glycogen and the outpouring of its store into the blood stream as sugar

Patients liable to hypoglycæmia should not drive a car Swimming is also dangerous, as the excessive muscular activity may induce hypoglycæmia in any diabetic who is taking Insulin.

DIARRHŒA, ACUTE

1 Treat any obvious cause (see also Food Poisoning, page 133)

2 Keep warm in bed with hot bottles and blankets if there is pyrexia or marked weakness. Apply fomentations to the abdomen for the relief of pain.

3 Remove the source of irritation, if the case is seen in the early stages. (a) Castor Oil, $\frac{1}{2}$ to 1 oz. or (b) if this is not tolerated by the stomach, Calomel, 3 grains, (c) Colon lavage.

4 Absorb intestinal toxins, e.g. Kaolin 1 to 2 dr., in water, every 4 hours.

5 Check irritation and excessive bowel movement by one of the following, Opium being one of the most useful drugs.

R Bismuth Oxycarb	gr 30
Soda Bicarb	gr 10
*Tinct Opu	m 10
Aq	ad 1 oz., every 4 hours
* or Liq Morph Hydrochlor	m 10

R Mist Cretæ, B.P.C. to which the following may be added if desired. Spt Ammon Aromat m 20
Tinct Catechu m 30

R Plumbi Acetat	gr 5
Acid Acetici	m 5
Tinct Opu	m 5
Aq Cinnamomi	ad 1 oz., every 4 hours
R Acid Sulphuric Dil.	m 10 to 15
Tinct Cardamom Co	m 20
Aq	ad 1 oz., every 4 hours

6 A Starch and Opium enema containing Tinct Opu, 40 minims, may be given.

7 No solid food should be given for at least 24 hours. Plenty of water may be taken. Apple pulp 2 lbs daily for an adult for a day or two, is a good method of commencing treatment, and later arrowroot gruel, milk, milk puddings and bread and butter may be added. A little whisky or brandy is often useful if collapse and exhaustion be marked.

DIARRHŒA, CHRONIC

Chronic diarrhœa calls for thorough investigation. A rectal examination should always be made; a fractional test meal may reveal achlorhydria; chemical, microscopic and bacteriological examinations may show evidence of fatty stools, pancreatic deficiency, colitis or chronic enteritis, tuberculosis, dysentery, etc

General Principles.

A patient liable to chronic diarrhœa should avoid tropical and sub tropical climates. A flannel binder may be applied to the abdomen for warmth. Dietetic discretion is necessary. The following articles are permitted: Roast or boiled meat, poultry, fish, white bread, toast, rusks, mashed potatoes, milk puddings, eggs, custard, jelly, fruit-juice.

Those which should be avoided include: Fruit, nuts, vegetables, wholemeal bread, pastry, cheese, pickles, seeds, currants, raisins and peel.

In *pancreatic diarrhœa* with fatty stools, fat should be drastically reduced or eliminated from the diet. In addition a preparation containing artificial pancreatic juice should be given after meals (Pancreatin). One of the diastase ferments may also be added, e.g. Taka-diastase.

In fermentative types, carbohydrates should be limited; in putrefactive types, animal protein should be reduced.

Gastrogenous diarrhœa (Achlorhydria) is perhaps the commonest variety encountered and usually responds well to treatment. Any additional factors such as alcoholic excess, immoderate tea-drinking and oral sepsis must receive attention.

Acid. Hydrochlor. Dil, dr. $\frac{1}{2}$ to 1, should be taken in a tumbler of water or orangeade three times a day with meals. It may later be found possible to reduce this dose.

Nervous diarrhœa includes those cases which are characterized by post-prandial bowel actions due to excessive activity of the gastro-colic reflex and those in which emotional disturbances are the main causal factor. In such instances dietetic measures are often ineffective and need not necessarily be insisted on. Regular morning

evacuation should be aimed at. The following mixture may be given before meals

R Potass Brom	gr 5 to 10
Tinct Belladonnæ	m 5
Aq Menth Pip	ad 1 oz

A pill containing Codeine $\frac{1}{4}$ to $\frac{1}{2}$ grain is often effective. Small doses of Liquor Arsenicalis and Tinct Nucis Vom. are sometimes recommended. Under exceptional circumstances such as the advent of a special social event, Opium may be given in the form of Tinct Opi or Chlorodyne but is best avoided as a routine measure.

Astringent mixtures are sometimes necessary for chronic diarrhœa (see Acute diarrhœa). The following Logwood mixture is also useful

R Cretæ Præparatæ	gr 15
Sugar (Sacch Purificat)	gr 30
Tinct Opi	m 5
Tinct Ipecac	m 10
Pulv Tragacanth.	gr 2
Decoct Hæmatoxyli	ad 1 oz

(See also Ulcerative Colitis Dysentery, etc.)

DIARRHŒA IN INFANTS

(A) *Simple Diarrhœa*. In mild cases adjustment of the diet (i.e. reduction of excess of fat or carbohydrate) after a preliminary period in which milk is replaced by albumen water will probably be sufficient. In severe cases treatment similar to that described below is required.

(B) *Acute infective gastro enteritis (Summer Diarrhœa)*

1 *Prophylaxis*

- Weaning should be avoided as far as possible during the summer months.
- All milk should be boiled or pasteurized and protected from flies and dust. Whenever possible it should be kept in a refrigerator or ice-chest.
- All bottles and teats must be cleaned and boiled after use. Soiled napkins must be removed at once and placed in soak.

2. *General Measures.* The infant must be kept warm. The buttocks require careful attention to prevent them becoming sore and should be washed, dried and powdered after each motion. If redness should appear, a square of linen or lint smeared with Vaseline, Zinc Paste, or Zinc and Castor Oil ointment may be applied before the napkin is put on. A very useful cream for sore buttocks is:

R. Zinc. Oxid.	. . . . .	gr 20
Ol. Amygdalæ	. . . . .	dr. 1
Liq. Hamamelidis	. . . . .	dr. 1
Paraff. Moll. Alb.	. . . . .	dr. 2
Adeps. Lanæ Hyd. (Lanolin)	. . . . .	oz. $\frac{1}{2}$

3. *Restoration of Fluid Loss.* Treatment of dehydration is most important. Rectal salines may be tried first. If these are not retained, subcutaneous (10 to 15 c.c. per pound body-weight), or intra-peritoneal ($\frac{1}{2}$ pint) salines must be given every 6 hours. Glucose should be included if there is evidence of ketosis.

4. *Elimination of Toxins.* In early cases a suitable dose of Castor Oil, Calomel, $\frac{1}{2}$ grain, or Hydrarg. cum Cret. may be administered. Later, colon lavage with normal saline may be used once, or if the child is well enough to tolerate it, twice daily. Kaolin, dr. $\frac{1}{2}$ to 1, may be given in water.

5. *Diet.* All food is withheld for 12 to 36 hours and replaced by fluids such as half-strength saline, plain water, albumen water, barley water, or rice water. The return to normal diet often presents difficulties and must be a gradual process determined by the progress of the child. Cow's milk must be diluted and skimmed, or one of the dried or acid milks tried. Later a little sugar may be added in the form of Dextri-Maltose. Finally half cream dried milk or ordinary milk mixtures may be employed. One or two drops of Vitamin A and D concentrates may be added.

6. *Special Symptoms.* Collapse is treated by hot water bottles, blankets or an electric cradle. Hot or mustard baths may be of value and injections of Nikethamide, $\frac{1}{2}$ c.c., are sometimes necessary.

Diluted brandy may help the general condition, and

sherry whey is often tolerated before milk foods. Gastric lavage may be employed for associated vomiting. The ears should be carefully examined for evidence of otitis media, and it may be necessary to incise a bulging drum. Chloral may be used for restlessness.

7 *Bacteriological examination* of the stools is advisable. Occasionally organisms of the dysentery group are found. Such cases should receive Sulphaguanidine or antidyentery serum, 10 to 20 c c intramuscularly.

DIPHTHERIA

GENERAL MANAGEMENT

Absolute rest is most important, the mildest case of faucial diphtheria being kept in bed either flat or with one pillow for at least 3 weeks. More serious cases require 6 weeks to 3 months. Except in the mildest cases the patient should do nothing for himself until the danger period of cardiac complications is passed. Additional pillows are then allowed and he may feed himself. Sitting up, walking and additional exercises are permitted in due course.

Diet

In mild cases solid food may be allowed from the beginning. In others, a fluid diet with milk as a basis is used and is increased by the addition of eggs and custard, etc. A full diet can generally be reached in 2 to 4 weeks.

If palatal paralysis with nasal regurgitation be present, milk feeds should be thickened with gruel or cornflour. Feeding with a nasal tube (infants) or œsophageal tube (adults) may be necessary. If vomiting occurs milk should be peptonized and rectal salines may be given.

Local treatment for the throat should rarely be employed. Gargles must never be given but syringing with Boric lotion, Chinosol (1 to 1000) or the following lotion

R. Soda Boratis	dr	1
Soda Bicarb	dr	1
Potass Chloratis	dr	$\frac{1}{2}$
Soda Chlorid	dr	$\frac{1}{2}$
Tinct Lavand Co	dr	1

Aq ad 1 pint

may be used if foetor is marked and if the procedure is not distressing to the patient. It is unsuitable for young children.

In severe cases, Glucose should be given by mouth or intravenously and the administration continued for 10 days. Insulin 10 units daily may be given if desired.

In severe cases, the bowels should be kept open with enemata on alternate days during the first few weeks, only in mild cases should aperients be used from the beginning.

Antitoxin

It cannot be stated too emphatically that all cases should receive an adequate dose of antitoxin at the earliest possible moment, for the mortality of cases thus treated on the first day of the disease is practically nil. It is, therefore, imperative that suspicious cases, especially young children, should be given antitoxin without awaiting the result of a swab. (*N B*—Direct smears are deceptive.)

Initial Dosage In mild cases and nasal diphtheria, 4000 to 8000 units. In moderately severe cases 16 000 units. In severe cases and laryngeal diphtheria, 24,000 to 48,000 units.

The dosage must be gauged by the extent of the membrane and the degree of toxæmia present. For smaller doses, subcutaneous injection into the anterior abdominal wall is employed. For larger doses and in all severe cases, intramuscular injections into the outer side of the thigh or gluteus maximus may be given. In the most severe cases intravenous injection is sometimes employed. The dose is repeated in 12 to 24 hours in all severe cases, and if the membrane is not separating. As much as 100,000 units as an initial intravenous dose may be necessary in the worst cases with extensive membrane extending on to the palate.

In malignant types, blood transfusion, 300–400 c.c. (over the age of 5), may be of value if given during the first four days of the disease.

For *Circulatory Failure* (usually after tenth to fourteenth day) raise the foot of the bed on blocks, and apply a hinder

to the abdomen. Injections of Adrenalin or Nikethamide may be given. Alcohol is of no value. Adrenalin 5 to 10 minims by mouth, has been suggested as a prophylactic.

In *pharyngeal paralysis* raise the end of the bed in order to allow mucus to drain into the mouth whence it may be removed by moist swabs. Secretion may be diminished by the administration of Atropine. Strychnine may be given. If thickened feeds are not taken nasal feeding and rectal salines are necessary.

In *diaphragmatic paralysis* artificial respiration by the Drinker or similar apparatus when available will often save life if used early.

On medico legal grounds the patient should not be pronounced free from infection until three consecutive negative swabs have been obtained from the nose and throat.

LARYNGEAL DIPHTHERIA

1 Early administration of not less than 24 000 units of antitoxin

2 Inhalations of steam and fomentations to the neck

3 Chloral and Bromide for restlessness

4 Tracheotomy —if laryngeal obstruction increases if cyanosis be marked if recession of the intercostal spaces be marked and if the air entry to the lower lobes of the lungs is very diminished

5 Intubation if expert nursing is available

6 Suction of membrane from larynx if special apparatus is at hand

Notes on Tracheotomy

1 Do not be hampered by a small incision

2 Avoid injuring the cricoid cartilage an accident which is often followed by a retained tube

3 See that the patient's head is straight and make the incision in the mid line

4 Failure to maintain an efficient airway may be due to
(a) Blocking of the inner tube by membrane —remove and clean inner tube

- (b) Slipping of the tube out of the trachea —remove the tube replace with a larger size if necessary and see that tapes are tied sufficiently tightly
- (c) Blocking of the trachea below the tube —remove the tube insert tracheal dilators and remove membrane with curved forceps

5 Nasal feeding may be necessary after tracheotomy and intubation

NASAL DIPHTHERIA

If unaccompanied by faucial membrane requires 4000 to 8000 units of antitoxin. The period of rest in bed may be curtailed since the absorption of toxin is not great. Cases with toxæmia and sanious discharge should be treated as severe faucial type

PROPHYLAXIS

In Schick positive cases immunity may be conferred

- (a) Alum precipitated Toxin (A.P.T.) which is well tolerated by young children. Two doses (0.25 c.c. and 0.5 c.c.) with an interval of 4 weeks should be given to children under 8
- (b) Formol Toxoid (F.T.) or Toxoid antitoxin Flocules (T.A.F.) are better tolerated by older children and adults. (Three doses of 1 c.c. at intervals of three weeks)

A small lump persisting for several weeks may form. The development of immunity may be proved by a subsequent Schick test (in 2 to 3 months)

Treatment of Carriers

1 Sulphanilamide powder by nasal insufflation night and morning and used as a snuff by older children during the day for a period of eight days

2 Attention to any abnormality in the nose and throat (tonsils and adenoids)

3 Fresh air

DISSEMINATED SCLEROSIS

There is little hope of curing the disease and, in view of the tendency to spontaneous remissions, it is difficult to judge the efficacy of any form of treatment

General Measures

Careful attention to the general health is necessary. The patient should have good food, fresh air and exercise but must avoid fatigue and for this reason, should spend 12 hours in bed and take as much rest as possible at the week ends. The consumption of tobacco and alcohol must be strictly moderate and constipation must be avoided. Focal sepsis should be eradicated, but extensive dental extractions at one sitting may lead to an exacerbation of the disease. During a relapse the patient should be confined to bed. Otherwise, he should be encouraged to continue his occupation as long as possible.

Physio therapy

Massage, exercises and passive movements are valuable throughout the disease. Not only is the patient encouraged but also the spasticity is improved. Exercises may be dropped in the later stages. While electricity in any form is contra indicated, hot baths and radiant heat are often of value. A walking chair may give confidence to the patient if walking re education is necessary. Any tendency to contractions should be counteracted by the use of splints at night, e.g. an aluminium shoe for contraction of the tendo Achillis.

Drugs

Strychnine is contra indicated, for it only tends to increase the spasticity. The most useful drug is Arsenic. This may be given in the form of *Liquor Arsenicalis* commencing with 2 minims, three times a day and gradually increasing the dose until at the end of 3 weeks the patient is taking as much as 20 to 30 minims in a day. The course of Arsenic should last for 4 or 5 weeks and may be repeated at a later date. In between the courses of Arsenic Potas

sium Iodide, 5 grains, t d s, may be given by mouth together with Mercury by inunction

If preferred, and especially in acute cases, Arsenic may be given by injection in the form of Neoarsphenamine (N A B) in weekly doses of 0.45 to 0.6 gram intravenously for 6 weeks. Alternatively, Sulpharsphenamine (Sulfarsenol) may be given by intramuscular injection, commencing with a dose of 0.06 gram and increasing gradually to 0.24 gram so that a total of 3.0 grams is given over a period of 3 months.

Protein shock produced by the intravenous injection of typhoid vaccine, according to some authorities is efficacious in bringing about a remission. Ten injections of T A B, commencing with a dose of 25 million bacilli, may be given at weekly intervals, the aim being to produce a moderate pyrexial reaction each time. The dose may be increased by adding a further 25 million organisms. A similar pyrexial reaction can be produced by "Pyriser" (B. Coh) vaccine, and is conveniently supplied in graduated doses. Quinine Hydrobromide, gr. 5, t d s, for prolonged periods has been recommended and courses of Liver therapy have also been tried.

Tincture of Belladonna will be found useful for sphincter trouble.

In the later stages it is probable that the patient will become bedridden. Care must be taken to avoid urinary infection and the development of bed sores. The patient should still be encouraged to use the limbs and to get up as much as possible. Not infrequently a superimposed hysterical element may be present and its removal by suitable encouragement will be followed by some diminution in the spastic paraplegia. In the very advanced stages the active measures suggested, such as arsenical injections and protein shock should be avoided but Arsenic by mouth may be continued.

The disease is aggravated by pregnancy which should therefore be avoided if possible, but there is no indication to terminate it once it has commenced except in acute and rapidly advancing cases.

DYSENTERY

The diagnosis and variety of the disease must be established by (a) Examination of the stools for amœbæ amœbic cysts and bacilli and (b) Serum agglutination tests in the bacillary form

General Treatment

1 The patient must be kept warm in bed. If restless an additional garment should be supplied or the limbs may be wrapped in cotton wool.

2 Copious fluids must be administered. In severe forms water or saline only 1 oz. every half or 1 hour should be given during the first day. This may be followed by albumen water, cherry whey, chicken broth, meat juice, jellies and later egg flip, arrowroot and rice water. As much salt as possible should be included in the fluids. Apple pulp may be given in amounts up to 2 pounds daily. As improvement occurs the diet may be gradually increased but should remain semi fluid until there are not more than two motions a day and blood and mucus have been absent for a week. Fish and chicken may then be added.

3 For severe dehydration intravenous glucose 5% in normal saline should be given. Blood transfusion also appears to be of value.

4 Pain and tenesmus may be relieved by fomentations to the abdomen. Turpentine stupes. Starch and Opium enemata or Morphia suppositories. Tincture of Opium 15 minims at night is of value. Injections of Atropine are useful for colic. Adrenalin may be given for collapse. Animal Charcoal for flatulence and Barbiturates for insomnia.

DYSENTERY, AMŒBIC

1 Give a course of Emetine 1 grain daily for twelve doses by subcutaneous or intramuscular injection. This course may be repeated.

2 In mild cases and for carriers Emetine bismuth iodide 3 grains may be given in gelatine capsules on an

empty stomach, at night, 4 hours after the last meal for 10 nights

3 Other drugs which have been employed, include Yatren given by enemata or in capsules, 1 grain, t.d.s., by mouth; Stovarsol 4 grains, b.d., Anayodin 6 grains, t.d.s. The course for each of these drugs lasts from 8 to 10 days

DYSENTERY, BACILLARY

1 In mild cases, Sodium Sulphate, dr 1, should be given every 2 or 3 hours during the first day and then every 4 to 6 hours for the next 5 or 6 days

2 If seen in the first three days, treatment should commence with Castor Oil, $\frac{1}{2}$ to 1 oz., to which Tinct. Opu, 15 minims, is added. Calomel is best avoided

3 The standard treatment is the administration of Sulphaguanidine, 3 grams 4 hourly for 4 or 5 days

4 Polyvalent anti-dysentery serum should be administered in large doses, e.g. 40 c.c. daily, or more in severe cases, for several days. This form of treatment is of most value in the early stages of the disease. Intramuscular injection is suitable, but in the most severe cases the intravenous route is preferable

5 Kaolin, 2 drachms t.d.s., should be given until the stools become faecal

N.B.—A mixed Shiga Flexner vaccine is recommended for prophylaxis and should be repeated at intervals of six months

DYSPEPSIA

(See also Chronic Gastritis, Aerophagy, Vomiting etc.)

The term dyspepsia or indigestion is a vague one and the underlying cause often so remote from the stomach that, in every case, organic disease must be excluded before this diagnosis is made. (*N.B.*—The following important conditions must be excluded: cardiovascular or coronary disease, renal disease including chronic uræmia, pulmonary

tuberculosis, Addison's disease, *thyrotoxicosis*, migraine, cerebral tumour, organic disease of the stomach, liver, gall bladder and colon)

There remain disorders of gastric function and motility such as *hyper* and *hypo chlorhydria*, *atony* and "nervous dyspepsia" (For special symptoms see under appropriate headings)

The main principles of TREATMENT may be summarized

1 Attention to teeth and oral sepsis, very thorough mastication of food, regular meals which are never hurried and are preferably taken in company

2 Regular exercise, such as walking, riding or golf, with rest before and after meals

3 Regular action of the bowels, without the use of strong purges

4 Suitable food (see Chronic Gastritis, page 135)

5 Drugs suited to the particular functional disorder present, and for the relief of prominent symptoms

6 Milder cases of nervous dyspepsia require pleasant surroundings, encouragement and reassurance that no organic disease is present. Appetizing food is necessary and 'feeding up' is often required

7 Spa treatment or West Mitchell regime may be necessary for the most severe cases with neurasthenia

The following prescriptions, in addition to those given under chronic gastritis, will be found useful

1 For Hyper chlorhydria and Hyper motility

R. Soda Brom	gr 10
Bismuth Carb	gr 30
Aq Chloroform	ad 1 oz tds, a c

2 For Hypo chlorhydria Achylia and Atony

(a) R. Acid Hydrochlor Dil	dr $\frac{1}{2}$ to 1
(b) R. Soda Bicarb	gr 10
Tinct Nucis Vom	m 5
Spt Chlorof	m 10
Infus Gent Co	ad 1 oz tds, a c
(c) R. Tinct Nucis Vom	m 5
Tinct Cardamom Co	m 30
Tinct Zinziberis	m 15
Aq Menth Pip	ad 1 oz tds, p c

EAR, COMMON AFFECTIONS OF

EARACHE

In view of the fact that otitis media is one of the most frequent and serious causes of earache, an examination of the drum head should be made in every case. Steps must be taken to remove wax if this obstructs a clear view.

In addition to otitis media and meatal boil, earache may be due to pain referred from a carious tooth or an unerupted third molar. Other causes include ulceration or inflammation of the pharynx and larynx, enlarged glands in the neighbourhood of the ear, parotitis or lesions of the temporomandibular joint.

Pain in the ear may be relieved by the application of a hot-water bottle, hot flannels or Thermogene. Fomentations, which render the skin of the external meatus sodden, should be avoided. Warm Olive Oil or Glycerin and Phenol drops may be instilled into the meatus, but in every case treatment for the primary cause should be carried out.

EAR, BOIL IN

In many instances the pain is very severe and can only be relieved by incision of the furuncle with a tenotomy knife (from within outwards) under short general anaesthesia, e.g. Gas, Ethyl Chloride or Evipan. This should be followed by careful toilet of the meatus which should be swabbed out with spirit and packed loosely with a wick of gauze soaked in 10% Ichthyol in Glycerin. A mixture of equal parts of Glycerin of Phenol and spirit, or Mercuric Chloride in spirit (1 in 2000) may also be used.

In milder cases, palliative measures may be adopted. The skin of the meatus may be painted with Tincture of Iodine, or 10% Menthol in Paraffin or 10% Ichthyol in Glycerin may be instilled.

Pain in the early stage may sometimes be relieved by introducing into the meatus a wick of gauze soaked in.

R. Mentholia	} aa . . .	gr. 4
Cocainæ		
Glycerini	} aa . . .	dr. 3
Paraffin. Liq.		

Fomentations should be avoided, but heat may be applied by other means. As healing takes place the following drops are useful :

R. Hydrarg. Oxidi Flav. . . .	gr. 3
Glycerin.	} . . . aa oz. $\frac{1}{2}$
Spirit. Vini Meth.	

In recurrent cases the general health should receive attention. Diabetes should be excluded and vaccines, preferably autogenous, may be employed.

EAR, FOREIGN BODY IN

Living animals such as flies should be killed with Chloroform vapour or a few drops of 5% Cocaine before removal by syringing. Inanimate bodies may be hard, such as heads or buttons, or may swell with moisture, e.g. peas or beans. In dealing with the latter, or objects which completely block the meatus, syringing should be avoided. A foreign body rarely causes much harm, but serious injury may be inflicted by unskilful or careless attempts at its removal.

In the first place the presence of the foreign body should be confirmed by inspection with an auriscope. In some instances, if there is a space between the body and the meatal wall syringing may be effective in removing it; and when a heavy object is present the ear should be dependent and the syringing carried out from below. In other cases it may be withdrawn by passing a fine hook between it and the meatal wall or it may be possible to grasp the object with suitable forceps. In young children, a general anæsthetic is generally advisable and, if the walls of the meatus are swollen and bleeding, preliminary packing with gauze soaked in a 10% solution of Cocaine to which a few drops of Adrenalin have been added should be carried

out. If there is much local inflammation it is often wise to wait until this has subsided before attempts at removal are made. A wool-coated probe soaked in Collodion will sometimes cause a foreign body to adhere to it.

In exceptional cases, an open operation exposing the posterior margin of the bony meatus may be necessary. This is certainly preferable to the injury of the tympanic membrane which may easily result from blind groping at a firmly fixed foreign body.

EAR, HÆMATOMA OF

If seen in the early stages the blood should be aspirated; later an incision may be necessary to remove blood clot. The convolutions of the auricle should be filled with plasticine or a vulcanite "dental" mould which may be kept in place with Elastoplast.

OTITIS MEDIA

Acute, suppurative. The treatment of this condition and the indications for paracentesis are beyond the scope of this work, but the following formula may be useful.

R Glycerini Phenolis . . . m. 60
Glycerin ad $\frac{1}{2}$ oz.

These drops should be instilled warm every 4 hours. Preliminary syringing with 1 in 60 Carbolic lotion may be necessary in the first place to remove pus and debris but should not be continued. On every occasion the meatus should be mopped dry before putting in the drops. To relieve pain, the ear may be applied to a rubber hot-water bottle covered with a pad of cotton-wool.

A purge should be given at the onset of treatment.

The administration of Sulphanilamide or Sulphapyridine may abort an attack, even when signs of mastoid involvement have become apparent.

Chronic, suppurative. Syringing should be avoided, but the meatus should be kept free from pus by constant mopping, a procedure which quite young children can be taught to carry out for themselves. Antiseptic drops

such as the above or simple spirit drops may be employed After their instillation the meatus should be smeared with Ungt^m Hydrarg Oxid^s Flav

If Hydrogen Peroxide (5 vols) drops are used the meatus should be swabbed dry after a few minutes and the drying process completed with spirit drops

Zinc ionization is a very valuable method of treatment in chronic cases

EAR, WAX IN

Hard plugs of cerumen may be softened by several instillations of a solution of Sodium Bicarbonate (10 to 30 grains to the ounce) *Liquid Paraffin* or *Olive Oil* may also be employed Subsequently the ear should be syringed with a lukewarm solution of Sodium Bicarbonate Auri scopic examination should be made from time to time in order to ascertain when the wax is completely removed

A wax hook is a valuable means of removing hard plugs in the hands of those accustomed to its use but is dangerous if unskilfully employed

ECZEMA See Dermatitis page 77

ELECTRIC SHOCK

1 In the first place the victim must be liberated from the current which if possible, should be switched off If this cannot be done the patient should not be touched with the bare hands If rubber gloves are not available the hands may be protected with layers of dry cloth or paper or the patient may be pushed away from contact with the circuit by means of a wooden stick or pole

2 In severe cases artificial respiration will be necessary and should be commenced at once and continued for several hours unless life is extinct

3 *Stimulants may be required* Hot bottles and hot blankets should be applied to the patient and hot coffee may be given per rectum Injections of Nikethamide (Coramine) or Leptazol (Cardiazol) may be necessary

4 Lumbar puncture is valuable in cases of coma, and may be repeated if the intracranial pressure is raised.

5 The local lesions should be treated on the general lines for hurds. Antiseptic or Saline dressings, Triple Dye jelly (page 43) or Tannic Acid applications are satisfactory. There is a risk of secondary hæmorrhage during the healing stages, and if the burns are severe the possibility of rupture of a main artery should be foreseen, and if it occurs must be dealt with by the application of a tourniquet and subsequent ligation at some distance proximal to the lesion.

EMPHYSEMA OF THE LUNGS

The treatment required in this condition is largely symptomatic and dependent on the degree of bronchitis or bronchial spasm present. (See page 50.)

Those subject to the malady should avoid playing wind instruments and reside, when possible, in a warm dry climate.

Malt and Cod liver Oil taken regularly especially during the winter months is of value and a mixture containing Potassium Iodide is useful in rendering viscid sputum less tenacious.

R Potass Iodid	gr 5
Ammon Carb	gr 3
Potass Bicarb	gr 10
Extr Glycyrr Liq	dr 1

Aq ad 1 oz. tds, po

Tinct Belladonna, m. 10 may be added if bronchial spasm is a feature.

In those cases in which the chest is rigid and expansion poor, breathing exercises should be carried out.

A course of treatment with compressed air is sometimes recommended if a suitable chamber is available.

EMPHYSEMA, SURGICAL

As a rule, this is not serious and requires no special treatment. If severe dyspnoea be present inhalations of oxygen may be given. In the unlikely event of the mechanical effects being so marked as to endanger life small multiple

incisions into the affected tissues will allow air to escape. If associated with a perforating wound of the chest a pad should be fixed firmly over the site of the injury.

ENCEPHALITIS, ACUTE

In addition to outbreaks of epidemic encephalitis sporadic cases of the condition are seen and in addition encephalitis due to a neurotropic virus may follow vaccination and occurs as a complication of various acute specific fevers.

No treatment is known which has a specific effect on the course of the disease although many procedures have been recommended. Careful nursing is a matter of greatest importance and symptoms must be treated as they present themselves in the individual case.

The following are some of the lines of therapy which have been recommended during the acute stages:

- 1 The intrathecal injection of convalescent serum
- 2 The intrathecal injection of the patient's own serum
- 3 The intravenous injection of a 2½% solution of Sodium Salicylate 30 to 50 c.c. twice daily for a week or 10 days
- 4 The intramuscular injection of Oragol a combination of gold and silver salts 5 c.c. every 5 days
- 5 The intravenous injection of 10 c.c. of the patient's own cerebrospinal fluid every 5 days
- 6 Hexamine may be given by mouth in doses of 10 grains three times a day. It has also been given intravenously 60 to 120 grains daily for 5 days.

7 *Forced Spinal Drainage*¹

It is well known that the intravenous injection of hypertonic saline causes the withdrawal of fluid from the brain and a lowering of the intracranial pressure. The tissue fluids including the cerebrospinal fluid pass into the blood.

On the other hand it has been found that the intravenous injection of hypotonic saline produces an increased

¹ Kube L. *Braun* 1928 li, 244. Retan G. M. *Jour Amer Med. Assoc* 1932 li 826.

hydration of the central nervous system, an increase in the intracranial pressure and an increased formation of cerebrospinal fluid.

Use has been made of this method of increasing the circulation of the cerebrospinal fluid in those diseases characterized by perivascular cellular infiltration, e.g. encephalitis, poliomyelitis and neurosyphilis. Cases of meningitis have also been treated by this method.

If a lumbar puncture is performed and the needle left *in situ* the excess of fluid drains off without causing any increase in the intracranial pressure.

TECHNIQUE A lumbar puncture is performed immediately before the intravenous injection. Fluid is allowed to drip from the needle during the injection of saline and for at least an hour after it has been completed. If for any reason the fluid should cease to flow the intravenous injection is stopped until drainage has been re-established. If headache occurs, drainage may be interrupted for 10 to 15 minutes by inserting the stylet into the lumbar puncture needle.

The intravenous injection consists of 1000 c.c. of 0.45% solution of Sodium Chloride and should take an hour to introduce. The procedure may be repeated, if necessary, in severe cases.

In the absence of further knowledge, the practitioner must unfortunately be left to make his own choice from these methods. Undoubtedly convalescent serum would be chosen when available during an epidemic.

In addition, cleaning the mouth and spraying the nasopharynx with 1 in 1000 Potassium Permanganate should be carried out. If lethargy is marked or coma be present repeated lumbar puncture should be performed and in such cases the intravenous injection of hypertonic saline (maximum adult dose = 30 c.c. of a 30% solution) or hypertonic Glucose (20 to 50 c.c. of a 50% solution) may be beneficial. The bowels frequently require attention and should be opened in the first place with Calomel, enemata may also be given. The bladder must be watched for retention of urine.

The patient should be kept in bed for at least 2 weeks after the disappearance of constitutional disturbances and should not return to work for at least another 6 months

Insomnia Suitable hypnotics are required, e.g. Chloral and Bromide or drugs of the Barbiturate group. The intramuscular injection of 2 c.c. of milk is said to be beneficial in this connection probably on account of the pyrexial reaction which it produces

Choreic phenomena The intramuscular injection of 4 c.c. of a 25% solution of Magnesium Sulphate has a sedative action

ENCEPHALITIS (SEQUELÆ)

Sequelæ are seen characteristically after encephalitis lethargica the important ones being Parkinsonism (paralysis agitans) and mental changes

Post-encephalitic Parkinsonism A number of drugs have been employed to diminish the rigidity and tremor (see page 242)

Mental Changes Mild cases may be suitable for treatment at home but the risk of suicide must be remembered. Other cases may be moved to a suitable institution or may require certification under the Lunacy Act. Some cases occurring in children can be dealt with under the Mental Deficiency Act

Massage sunlight exercises games and organized recreation are beneficial

Sometimes improvement in the conduct of children may be obtained by the administration of Bulbocapnine 1½ grains three times a day orally or by hypodermic injection for periods of 1 to 2 months

ENDOCARDITIS, MALIGNANT OR SEPTIC

Although occasional recoveries are said to take place both in the acute and subacute varieties of the disease and periods of improvement are often seen the outlook in every case once the diagnosis has been established is extremely grave

The general management of the case must be on the lines suggested for heart disease (page 154). The patient may be nursed in the open air if desired and symptomatic treatment given as required e.g. iron for anaemia. Intra venous antiseptics, sera and vaccines have all had disappointing results. Transfusion sometimes produces temporary improvement and if the causal organism can be obtained by blood culture an immune transfusion may be worth a trial. A blood culture should be taken in every case. As a rule, symptomatic treatment and placebos should be given, active measures which often interfere with the comfort of the patient being avoided.

The action of Sulphapyridine is uncertain but in view of the otherwise hopeless prognosis it is well worth trying. Its combination with Heparin is not without serious dangers such as cerebral hæmorrhage.

ENTERIC FEVER (including Paratyphoid A and B)

Incubation period approximately 14 days (limits 5 days to 4 weeks)

Isolation period three negative bacteriological examinations of stools and urine (about 6 weeks)

I PROPHYLAXIS

(a) The control of epidemics by the Public Health Authorities

(b) Prophylactic inoculation with T.A.B. vaccine i.e.
Typhoid 500 million

Paratyphoid A and B of each, 250 million

Two injections are given at intervals of 10 days, the dose being doubled for the second injection (immunity lasts at least 4 years)

N.B.—Dosage for Children

Between 10 and 16 = $\frac{2}{3}$ adult dose

“ 7 and 10 = $\frac{1}{2}$ “

“ 2 and 7 = $\frac{1}{3}$ “

Under 2 = $\frac{1}{10}$ “

(c) Prevention of spread from the patient (see below and carriers)

II TREATMENT PROPER

Nurse the patient efficiently and treat symptoms as they arise

(1) *General Management* (including main points of nursing).

Rest in bed, one pillow. Air or water bed may be necessary. In second and third weeks turn the patient from side to side at least every 4 hours to avoid pulmonary congestion and bed sores (except after hæmorrhage). Blanket bathe and attend to back and pressure points with spirit and powder twice daily. Clean mouth after each meal with Glycerin of Borax or weak Carbolic lotion. The regular use of chewing gum also helps salivation and oral cleanliness.

TO PREVENT SPREAD OF INFECTION—Those in attendance should wear overalls or rubber aprons the outer side of which should be carefully marked. Rubber gloves are necessary when giving bed pans and enemata. All stools, urine and sputum must be covered with 1 in 20 Carbolic or Lysol for at least 2 hours. Linen is soaked in 1 in 20 Carbolic for 2 hours, then boiled. All feeding utensils must be kept separate. No one attending to a case of enteric should take any part in the preparation or serving of food to others.

(2) *Diet*

The modern tendency is to be more liberal, but the points to remember are (a) the fever results in diminution of the power of digestion and absorption, (b) any matter which is undigested when it reaches the lower ileum increases peristalsis and may cause abrasion of the ulcerated areas.

The basis of the diet is milk, for an adult 3 pints daily (5 oz feeds every 2 hours, four hourly at night). This may be given diluted with barley water, flavoured with tea or coffee, or fortified with plasmon, arrowroot or Benger's food. Custard, junket, jelly, cream, plain or milk chocolate, plain toffee and ice cream may be allowed. In milder cases, mashed potatoes, eggs (raw or slightly boiled), and crustless bread and butter may be given. At the end of the

fourth week, pounded fish and later minced chicken may be added. Plenty of sugar (glucose or lactose) may be taken.

It may be necessary to modify this liberal diet in individual cases. If curds appear in the stools milk should be peptonized. Diarrhoea calls for stricter dietary than constipation and if tympanites is marked the milk must be peptonized and the sugar and carbohydrate reduced. Alcohol is certainly not required as a routine, but to discontinue it in a person accustomed to its use may be unwise. It is best employed when the patient is weak and taking other nourishment badly.

(3) *Medicinal Treatment*

Apart from treating symptoms as they arise drugs play little part in the therapeutics of the disease. In any case the patient should not be disturbed more frequently than is necessary for the routine of nursing and feeding.

If desired, one of the following, which possibly has some effect in checking diarrhoea, tympanites and offensiveness of stools, may be employed.

(a) Salol, 10 grains, t.d.s.

(b) Oil of Cinnamon 2 to 5 minims taken in capsules or in milk every 4 hours (this may produce gastric irritation)

(c) R. Acid Hydrochlor	Dil	m	20
Glycerini		dr	$\frac{1}{2}$
Aq. Destillata		ad	1 oz

every 4 hours between feeds

(d) Intramuscular injections of Iodo bismuthate of Quinine, 3 c.c., every other day have recently been recommended.

(4) *Serum, vaccine and Bacteriophage therapy* are in the experimental stage and unsuitable for routine use. Rodet's serum, 20 c.c., if given before the twelfth day, is said to modify the attack (except in Para B). Favourable results are reported from the use of Felix's Serum given in daily doses of 50-100 c.c. for three to five days.

(5) Convalescent Serum has also been tried and blood transfusion is said to have a definite value in severe cases.

Sulphonamide drugs have been used but their effect is unproven. If employed, intramuscular injections should be given to avoid the risk of inducing digestive disturbances. They are most likely to be of use in the treatment of complications.

(6) *Hydrotherapy* This should be employed as a routine when the temperature is high.

(a) *Sponging* When the temperature exceeds 102.5°F , either cold or tepid sponging may be employed every 4 hours for 15 minutes. The former lowers the temperature more effectively but is less pleasant for the patient.

The COLD JACK Envelop the patient for half an hour in a sheet wrung out of water at 75°F and cover with a blanket. Keep the sheet moist by sprinkling with cold water. Repeat four hourly if desired.

(b) *Bathing* This method which is said to reduce the mortality of the disease, but which is now rarely used requires two or more attendants and a portable bath. The patient is lifted on a sheet into the water at a temperature of 100°F , which is lowered to 80°F by adding cold water or ice. During the 10 to 15 minutes in the bath the pulse is watched carefully and the limbs and trunk are rubbed. This procedure is carried out four hourly when the temperature is over 102.5°F , provided no complications are present.

III TREATMENT OF SYMPTOMS AND COMPLICATIONS

Diarrhœa—(over 4 to 5 foul, watery motions)

(1) Regulation of diet is more important than drugs. Give peptonized milk diluted with lime water or albumen water.

(2) *R. Bismuth Carb* gr 30
Mist Cretæ (BPC) ad 1 oz

(3) Tinct. Opi, or Dover's Powder are sometimes given but as a rule are best avoided.

(4) For severe tenesmus a Starch Mucilage (4 oz) and Opium enema (Tinct. Opi 40 minims) may be given.

Constipation Aperients should be avoided. A simple enema on alternate days is sufficient. A Glycerin sup

pository may be equally effective, Liquid Paraffin, $\frac{1}{2}$ oz., is useful if the stools are hard, especially during convalescence

The following mixture has also been recommended

R. OL. Olive	-	-	-	oz	1
Liq Potassæ	-	-	-	m	40
Saccharini	-	-	-	gr	$\frac{1}{2}$
Sodu Bicarb	-	-	-	gr	5
Aq Destill				ad	1 oz t.d.s

Tympanites Reduce diet, especially sugar and carbohydrate. Apply Turpentine stupe or ice poultice to the abdomen. Pass rectal tube or give enema (simple or turpentine). By mouth, give Oil of Cinnamon 2 to 5 minims or Turpentine, 5 to 10 minims four hourly

Insomnia, delirium and headache often respond to hydrotherapy. Aspirin in mixture form, and cold compresses to the head, may be used for the latter. Dover's Powder, 15 grains

Retention of Urine, Cystitis For the former catheterization may be required, for the latter, Hexamine, 10 grains, t.d.s., which should also be used as a prophylactic when ever catheterization has been found necessary. Pituitrin $\frac{1}{2}$ c.c., may be tried before resorting to catheterization

Perforation Immediate operation is necessary. If in doubt withhold Morphia until the decision to operate has been made

Hæmorrhage Absolute rest should be enforced and hydrotherapy omitted. Discard bed pan and allow motions to be passed on to large pads of wool or tow. Reduce diet to a minimum. Inject Morphia $\frac{1}{4}$ grain, provided perforation is excluded, apply ice bags to lower abdomen. Astringents and hæmostatics by mouth are useless, but an injection of normal horse serum (10 c.c.) or Calcium Gluconate may be given. For collapse, raise the foot of bed and inject Camphor 3 grains, Strychnine $\frac{1}{32}$ grain, or Nikethamide (Coramine) 1 to 2 c.c.

Intravenous saline or, better, blood transfusion, may be necessary

Thrombosis Elevate the leg on pillow or inclined plane

3 The administration of drugs

- (a) The most useful drug is Chloral Hydrate in doses of 30 to 40 grains by mouth or a similar dose with the same amount of Bromide per rectum
- (b) Somnifaine 2 c.c. intramuscularly or Soluble Phenobarbitone (Luminal Sodium) 4 to 6 grains by hypodermic injection are very effective
- (c) Morphia $\frac{1}{4}$ grain alone or combined with Hyoscine $\frac{1}{8}$ grain is usually more handy but is not without some danger
- (d) Paraldehyde dr 4, in an equal amount of Olive Oil per rectum.

4 Lumbar puncture with removal of 10 to 20 c.c. of cerebrospinal fluid may be beneficial in severe cases

5 Tepid sponging may be required for pyrexia Strychnine Nikethamide or other stimulants may be given when there is marked exhaustion or cardiac weakness Nasal feeding is occasionally necessary and Glucose should be given in such cases to combat acidosis

TREATMENT BETWEEN ATTACKS

1 *Drugs* Many drugs have been employed and while Bromide or Phenobarbitone (Luminal) are most likely to be successful some cases react more favourably to one of the other preparations which should therefore be tried if the results obtained with the first named are not satisfactory

The aim of treatment is to check the occurrence of seizures and in time to arrest the manifestations of the disease so that fits do not recur when treatment is stopped

An attempt should always be made to time the administration of drugs to precede the occurrence of fits If the fits are mainly nocturnal the maximum dose should be given at night If they occur in the morning a dose should be taken on waking When fits occur with menstrual periodicity the regular dose should be increased or even doubled just before the menses are expected

It may be stated as a general rule that under no circumstances should an epileptic miss a dose of the prescribed drug until at least 2 years have elapsed from the occurrence of the last fit The dose of the drug or its frequency of

administration should then be gradually reduced for sudden cessation may precipitate status epilepticus

(a) *Bromide* Potassium Bromide is most frequently used but Sodium or Ammonium Bromide may also be employed e.g.

R Potassu Bromidi	gr 10 to 20
Aq Chloroformi	ad 1 oz
Twice or three times a day	

or R Potassu Bromidi	gr 10
Sodu Bromidi	gr 5
Ammonu Bromidi	gr 5
Tinct Cardamomi Co	dr ½
Aq Menth. Pip	ad 1 oz

The troublesome complication of bromide acne may be diminished by the addition of Liq Arsenicalis m 2 to each dose

Unless the patient has previously taken the drug treatment should commence with 10 to 15 grains three times a day 20 minutes after food. If attacks are nocturnal the final dose may be increased or doubled. Increase of dosage may be necessary but the total amount should not exceed 90 grains a day and rather than employing such large doses it is better to supplement with Phenobarbitone

Since bromide tends to displace chloride in the blood and the presence of the latter accelerates bromide excretion the dangers of bromide intoxication are diminished if there is an adequate intake of Sodium Chloride and fluids

(b) *Belladonna* This is a most useful and often neglected drug which is especially valuable in minor epilepsy. It should usually be combined with Bromide and the dose adjusted so that no toxic symptoms (paralysis of accommodation, dryness of the mouth or mental excitement) are produced

A suitable prescription for use in epilepsy especially if Bromide alone is not adequate is

R Potassu Bromidi	gr 10 to 15
Tinct Belladonnæ	m 5 to 10
(Liquor Arsenicalis)	m 2
Aq Chloroformi	ad 1 oz tds

5 minutes may be sufficient to stop hæmorrhage. Cold compresses may be applied to the bridge of the nose and temples. Another method is to sit the patient in a chair with his feet in a pail of hot water. If these measures fail the nostril may be plugged with cotton wool or gauze soaked in Adrenalin or Hydrogen Peroxide. Another effective plug can be made by inserting an ordinary small rubber balloon which is afterwards inflated. As a rule, plugs should be removed within 24 hours. In exceptional cases when it is considered advisable to retain the plug in position for a longer period, it should be moistened frequently with Hydrogen Peroxide in order to check bacterial growth.

If the bleeding is very serious, injections of Calcium Gluconate, normal horse serum or one of the coagulating preparations (Hæmoplastin, Coagulin Ciba) may be given.

Plugging the posterior nares is an unpleasant operation and is rarely necessary if an efficient anterior plug is inserted.

If hæmorrhage occurs repeatedly from one spot on the septum this may be touched with the point of the electric cautery.

Bleeding may be so severe and the loss of blood so great that Morphia or even blood transfusion may be required.

ERYSIPELAS

GENERAL. The patient should be isolated and kept in bed. Copious fluids and as much nourishment as possible must be administered, and the bowels opened by aperients. When the face is affected the eyes should be protected by 5% Argylol drops. If they become inflamed lavage with Boric lotion should be carried out. The urine must be tested for albumin and sugar.

LOCAL TREATMENT

Many local applications have been employed, among the simplest and most useful is Ichthyol ointment applied direct to the part and covered with lint, which if the face is affected is cut to form a mask. Strips of lint or linen soaked in Perchloride of Mercury, 1 in 4 000, may be laid on, or the area painted with 5% Brilliant Green, 1% Copper Sulphate, or 1% Picric Acid. Painting the healthy skin

half an inch away from the spreading margin with Tincture of Iodine or Collodion is said to limit the extent of the lesion

By far the most comforting local treatment is the application of Infra red rays for 15 minutes every 4 hours and this should be done whenever the apparatus is available

Ultra violet light (1 to 1½ Erythema dose) is also said to be beneficial especially when employed early Serum has been used extensively, both in the form of erysipelas anti-toxin and scarlatinal antitoxin, but the results are variable In the severest cases either of these sera are worth a trial with a view to combating the toxæmia rather than affecting the spread of the process

Autogenous vaccines are useful in recurrent cases When the disease takes the form of a deep and spreading cellulitis multiple incisions should be made early

Sulphanilamide is the most useful remedy and should be employed from the start in every case Since its introduction the importance of local treatment has diminished

EYE, SOME COMMON CONDITIONS

BLEPHARITIS

Chronic blepharitis may remain obstinate to treatment where for example, diabetes syphilis or tuberculosis is the cause Cases of acute and chronic blepharitis are best treated by frequent bathing and removal of the crusts from the lids by the use of a lotion e.g. Boric lotion or normal saline This should be followed by the application of an ointment to the edges of the eyelids

R. Oculentum Hydrarg. Or. Flavum 1%

Apply to the eyelids after each bathing

Some patients find this ointment irritating and it can be replaced by

R. Oculentum Hydrarg. Ammon. Dil. 1%

Where blepharitis may be kept up by the presence of a fissure at the canthus touching the affected area with the Silver Nitrate stick often produces rapid healing Infection of the lachrymal sac and errors of refraction should always be sought as possible causes

the causative factor should be treated when the local condition begins to show signs of healing. Active interference with the cause of the corneal lesion may produce an increase in the severity of the ulcer if such treatment is begun too early.

Careful attention should be paid to any corneal injury. Foreign bodies should be looked for. One of the following should be used for irrigating the conjunctival sac and removing the secondary conjunctivitis which is often present.

(1) R. Lotio Hydrarg. Perchlor. 1 7000

Dilute with equal part warm water and bathe eye t d s

(2) If there is much conjunctival cedema warm Normal Saline Solution is very helpful

(3) R. Lotio Hydrarg. Oxycyanid. 1 10 000

For bathing eye t d s

Atropine is required when iritis is present or the ulcer is penetrating and may be combined with the above treatment in this manner

R. Guttæ Atropinæ Sulph. 1%

1 drop in eye after the bathing

or R. Oculentum Hydrarg. Ox. Flavum & Atrop. 1%

Instil in the eye after the bathing

This is useful where the cornea requires stimulating

The use of Atropine should always be carried out with discretion in adults for fear of precipitating an attack of glaucoma and where the anterior chamber is shallow careful watch should be paid to the state of the intra ocular tension during the whole time it is administered.

Where the ulceration is persistent or shows signs of becoming progressive, cauterization of the ulcer by the application of pure Carboic Acid often arrests the condition. One or two drops of Cocaine Hydrochloride 5% are instilled into the eye as a local anæsthetic. After waiting 2 or 3 minutes the eyelids are held apart the conjunctival sac dried with blotting paper and the Carboic Acid is then applied to the ulcerated surface with a pointed match stick having previously ascertained the extent of the ulceration by staining with Fluorescein 2%.

It is important that attention should be paid to the

patient's general health and it should be borne in mind that a debilitated condition frequently results from the pain produced by corneal ulcer

DACRYOCYSTITIS

This condition is an inflammation of the lachrymal sac and may be acute or chronic. Symptoms consist of severe pain, signs of local inflammation over the sac and occasionally pus regurgitation from the punctum.

Acute dacryocystitis Treatment consists of application of hot fomentations frequently, and in many cases incision and drainage under general anaesthesia.

The cause of obstruction of the duct which primarily gives rise to an inflammation should be remedied when the inflammation has subsided.

Chronic dacryocystitis may be consequent upon an acute attack due to obstruction of the duct. Such a condition may be produced by catarrh, injury to the nasal bones, tumours of the adjacent tissues, syphilis or tuberculosis. In all cases an examination should be carried out to exclude the possibility of deviation of the septum, nasal polypi, rhinitis and sinusitis obstructing the opening of the duct in the inferior meatus of the nose.

Treatment consists of instillation of antiseptic and astringent drops into the conjunctival sac immediately after emptying the sac by pressure over it. The following prescription is very helpful in these cases.

R Zinci Sulph	gr 2
Liq Hydrarg Perchlor	dr 1
Aqua Laurocerasis	ad 1 oz.
1 drop in affected eye t.i.d.	

If the condition is resistant to treatment excision of the sac may be necessary.

EPIPHORA

Many causes may produce the condition and in the treatment they should be searched for and corrected.

In adults disorders within the canaliculi which may produce epiphora are stricture, pus formation and foreign

body in the duct itself a catarrhal condition of the lining epithelium or pressure from a tumour in adjacent tissues.

An effective remedy for epiphora in the presence of catarrhal obstruction of the duct is the use of the following prescription

R. Zinc Sulph	gr 1
Aquam	ad 1 oz.
1 drop in the affected eye night and morning	

Syringing of the duct after cocaineizing the punctum lachrymal is also helpful treatment but probing should only be performed by an expert.

A common cause of epiphora in the new born is congenital obstruction of the naso lachrymal duct and the treatment is probing the duct and syringing under general anæsthesia.

FOREIGN BODIES IN THE EYE

In all cases of foreign body suspected of being present in the conjunctival sac the upper lid should always be everted and the surface thus exposed carefully examined in addition to examining the lower conjunctival fornix and the external surface of the eyeball. When the foreign body lies superficially it is best removed by lightly flicking it off with soft material. If it is seen on the cornea in order to prevent undue trauma by manipulation, Cocaine Hydrochloride drops 5% should be instilled in the injured eye and the foreign body removed with the point of a needle or small spatula. If the patient is nervous the eye is held still with fixation forceps the eyelids being kept apart with an eye speculum. However the use of an eye speculum is not often necessary. If the foreign body is deeply embedded in the cornea and attempts at its removal prove ineffective it is safest to refer the patient to a specialist or hospital.

Subsequent treatment for slight lesions of the conjunctiva produced by foreign bodies is the use of a lot on such as Boracic twice daily until the inflammation caused has disappeared. It is safest in injuries of the cornea also to prescribe the following

R. Oculentum Hydrarg Ox Flavum ̄
 Atropina 1%
 Instil in the eye twice daily after each bathing

Thus the subsequent risks of intra-ocular infection are minimized by keeping the pupil dilated and at rest. In addition a pad and bandage should be worn until the local signs of injury show evidence of healing. Where the injury has produced a penetrating wound of the eye the immediate treatment should consist of

- 1 Instillation of Cocaine drops 5% to relieve the pain
- 2 Frequently irrigating the eye if infection is present
- 3 In all cases Atropine, 1% should be instilled
- 4 Eye pad and bandage
- 5 The case should be referred for specialist treatment

GLAUCOMA

Acute Glaucoma The predisposing conditions are general debility, anxiety, hypermetropia a shallow anterior chamber and swelling of the lens. The symptoms are pain—often very severe, increasing failure of vision haloes round lights, haziness of the cornea—due to oedema, shallowness of the anterior chamber, and dilated and fixed pupil.

Treatment is designed to open the filtration angle and lower the ocular tension. The patient must be put to bed and analgesics or hypnotics administered. Morphine is the most suitable in these cases as it also produces myosis. Eserine should be used frequently in the acute stages.

R. Guttae Eserinae Sulph. 0.5%
 1 drop in affected eye half hourly

Application of heat either dry or moist, is very soothing and a leech applied to the temple frequently relieves the congestion and pain. In addition, the patient should be purged. If these measures fail to relieve the tension the patient must be operated upon, and either an iridectomy or a scleral trephine with iridectomy are the operations of choice.

Chronic Glaucoma There are often no premonitory

3 Hot bathing of the affected eye three hourly

4 Instillation of Atropine drops, 1%, t.d.s., keeping watch on the tension

5 If there is accompanying conjunctivitis, the eye should also be irrigated with Boric lotion

6 Application of a leech to the temple relieves the congestion

7 The eye should be rested by keeping a pad and bandage over it during the acute stage

8 If the dilatation of the pupil is slow it may be hastened by a subconjunctival injection of Mydrine

9 Where the reaction to treatment is slow, protein shock is sometimes very helpful and is best carried out by the injection of whole boiled milk intramuscularly, the dose being 10 c.c. for each injection. Four injections on consecutive days should be given, keeping the patient in bed and watching the temperature chart

Once the pupil is fully dilated and as soon as all inflammation has disappeared, treatment should gradually be relaxed

Chronic Iritis

1 In this condition also, it is best to investigate the patient's general health in order to ascertain the cause

2 Atropine drops, 1%, t.d.s., for the affected eye until the pupil is dilated

3 Sub-conjunctival injection of Mydrine if the dilatation is slow

4 After ascertaining the cause, active treatment can be carried out forthwith

5 It is usually unnecessary to have the eye covered up

Subsequent to treatment of the acute and chronic stages the refraction should be ascertained and if necessary, corrected.

FIBROSITIS

The general principles of treatment are the same whatever the site of the inflammation (e.g. lumbago, 'stiff neck,' 'intercostal neuralgia')

1 GENERAL TREATMENT

It is necessary to avoid pain by limiting the movement of the affected part, so that in severe instances (e.g. lumbago) the patient must be confined to bed.

The most useful drugs are Aspirin or Sodium Salicylate. Phenacetin and Caffem or Veganin may also be used for the relief of pain. In gouty cases, Colchicum and Potassium Iodide should be given.

R. Potassii Iodidi	gr 5
Tinct. Colchici	m 10
Extr. Glycyrrhizæ Liq.	dr 1
Syrup. Limonis	dr 1½
Aquam	ad 1 oz t.d.s.

Focal sepsis should be eradicated e.g. dental abscesses. The bowels should be regulated and in most cases it is wise to commence treatment with a brisk purge.

2 LOCAL TREATMENT

(a) *Massage* This is especially useful if tenderness is localized to painful nodules. The pressure applied should be light at first.

(b) *Heat* This may be applied in the form of hot-water bottles, poultices e.g. Antiphlogistine (Cataplasma Kaolin), radiant heat or infra red rays.

(c) *Counter-irritation* Friction with a liniment such as Methyl Salicylate, Turpentine, or Aconite, Belladonna and Chloroform (Lin. A.B.C.) may be tried. Painting with Tincture of Iodine or the application of a Belladonna plaster is also useful.

Acu puncture is an old fashioned remedy which is followed by the relief of pain. Several sterile surgical needles are inserted deeply into the lumbar muscles after preparation of the skin, and left *in situ* for about 10 minutes.

A very useful method for the relief of pain which can be localized is the injection of 1% Quinine and Urea Hydrochloride into the painful spot. Several injections may be made over a wider area if desired. A total of 5 to 10 c.c. of the solution may be injected at one sitting.

Other local injections include Histamine (0.1 milligram) and Procaine 1%.

In *chronic cases*, hot-air baths, diathermy, massage and spa treatment may be recommended. Manipulation of the back under general anæsthesia may be employed to break down adhesions in chronic cases of lumbago. Morphia for pain should be avoided.

FLATULENCE (Colonic)

Cases may be divided into two main types —

(a) Those in which the symptoms are due to excessive carbohydrate fermentation and which can be relieved by restricting carbohydrate intake

(b) Those due (i) to defective absorption of gas from the bowel, for example in venous congestion caused by portal obstruction or (u) excess of unabsorbed gas resulting from aerophagy (page 5)

In this type daily injections of Pituitrin, up to 1 c.c., is followed by an action of the bowels and expulsion of the gas

FOOD POISONING (*Bacterial*)

1 In severe cases the patient should be confined to bed and warmth is essential

Bacteriological examination of the stools and serum agglutination test are necessary for the full investigation of the case. The Medical Officer of Health should be notified.

2 If the patient has not vomited and there is reason to believe that the infected food is still in the stomach, gastric lavage may be carried out, or an emetic of salt and water administered. The stomach should also be washed out in cases with excessive vomiting

3 Give Castor Oil, $\frac{1}{2}$ to 1 oz

4 Fluids only should be given until the diarrhoea has abated, e.g. Peptonized or citrated milk, 3 to 4 oz every 2 hours

Brandy is sometimes useful and champagne may be required if vomiting is excessive

5 Drugs Bismuth and Kaolin are the most useful and may be given alternately

	R Bismuth Carb	gr 20 to 30
	Liq Morphine Hydrochlor	m 10
	Aq Chloroform	ad 1 oz every 4 hours
or	R Bismuth Subeylat	gr 10 to 15
	Pulv Trag Co	gr 10
	Aq ad 1 oz	

6 Stimulants such as Nikethamide, Strychnine are required for collapse. At the same time subcutaneous or intravenous saline may be necessary.

7 Fomentations should be applied to the abdomen for pain. Morphia may be necessary, but should be avoided if collapse be present.

8 For persistent and severe diarrhoea colon lavage may be given provided there is no collapse.

Mushroom Poisoning

Repeated gastric lavage should be done and an injection of Atropine $\frac{1}{100}$ to $\frac{1}{80}$ gram given. This may be repeated if necessary.

(See also Gastritis acute page 134 Diarrhoea page 90, Botulism page 45)

GASTRITIS

Acute Gastritis In severe cases the patient should be confined to bed. If the stomach contents are not evacuated by spontaneous vomiting $\frac{1}{2}$ to 1 pint of warm water should be given. (One drachm of Sodium Bicarbonate may be dissolved in this if desired.) Tickling the fauces may then be employed to induce vomiting. On the other hand, persistent vomiting may be a feature of the case and in such instances the treatment recommended for vomiting (page 339) should be carried out gastric lavage being employed when indicated. Calomel followed by a saline purge should be given but if diarrhoea is present Castor Oil is preferable.

Nothing but water flavoured with tea or lemon or soda water should be given by mouth until the acute symptoms have subsided, diluted milk may then be taken and followed by farinaceous foods eggs and finally fish and chicken.

Fomentations poultices or a Mustard plaster may be applied to the epigastrium if pain is severe. Pain persisting

after vomiting may require Morphia Nausea is relieved by Chloroform Water The following mixture is suitable as a gastric sedative

R Bismuth Carb	.	gr 30
Sodu Bicarb	.	gr 15
Aq Menth Pip	.	ad 1 oz. t d s. p c
or four hourly		

Chronic Gastritis.

The main principles are to remove the cause to place the patient on a suitable diet and to relieve symptoms

The teeth must receive attention, and thorough mastication of food taken at regular hours insisted on Constipation is to be avoided, the bowels being kept regular by morning salines, Paraffin, or simple sperients such as Rhubarb, Senna or Cascara

Half an hour's rest before meals is advisable and smoking should only be permitted after food

The following articles must be avoided Alcohol, all condiments, pork, high game, shell fish, twice-cooked meat, new bread, pastry, excess of fat (except butter) skins and pips of fruit, coarse vegetables such as cabbage, carrots and turnips (vegetable purees are allowed)

Suitable articles include boiled or roast mutton, minced beef, chicken, tripe, fish (whiting, turbot and sole), eggs, toast, rusks, milk and farinaceous foods, stewed fruit, asparagus, spinach and cauliflower Except in gastric dilatation, 2½ to 3 pints of fluid should be taken daily, but tea must be weak and freshly made and should be avoided at protein meals Coffee should be diluted with an equal amount of milk Fluids are best taken apart from meals, e g ½ pint of hot water 1 hour before food

A bitter mixture before meals is indicated if the appetite be poor, e g

R Sodiu Bicarb	gr 15
Spt. Ammon. Aromat	m 30
Infus. Gent Co	ad 1 oz t d s., a.c
or R Tinct Nucis Vom	m 5
Acid. Nitro hydrochlor Dil	m 10
Infus. Gent Co	ad 1 oz. t.d.s., a.c.

The former is most useful in cases with hyper acidity and Tinct. Rhei Co., 20 to 30 minims, may be added if desired. The second mixture gives best results when hypochlorhydria is present. After meals, Milk or Cream of Magnesia are useful and Mist Bismuth Co. cum Pepsino (B.P.C.) is a valuable standby. Proprietary preparations including Bisodol, Taka-diastase, etc., may be used.

When gastritis is associated with achlorhydria, Dilute Hydrochloric Acid, 1 drachm in 5 oz. water flavoured with orange juice, should be given before or with meals. In these cases also and when there is gastric catarrh with excessive mucous secretion, daily gastric lavage may be employed. Hurst suggests using dilute Hydrogen Peroxide ($\frac{1}{2}$ oz. in a pint of water) for this purpose. This should not be done in neurotic cases. (See also Vomiting, *Ærophagy*.)

GENERAL PARALYSIS OF THE INSANE

The diagnosis must be confirmed by finding a positive Wassermann reaction in the blood and cerebrospinal fluid. A colloidal gold curve of the following type will be found 554311000 or 5555413200.

Some form of pyrogenic treatment should be employed unless (a) the general health is too poor or (b) aortic disease is present. Malarial therapy is a satisfactory method to employ. After inoculation either by injecting blood from a previously infected patient or by direct infection by mosquito bites, ten to fourteen rigors should be permitted to occur provided the patient's strength is maintained. The malaria should then be terminated by giving Quinine, 10 grains *t.d.s.* for 3 days.

Another form of pyrotherapy which may be employed when malaria is contra-indicated is the intravenous injection of Pyrifer, a specially prepared B. Coli vaccine which is supplied in graduated doses. It is probably less effective than malaria.

Routine anti-syphilitic treatment with Bismuth and Neoarsphenamine should then be carried out.

In those cases in which pyrotherapy is contra-indicated,

especially when aortic disease is present Tryparsamide should be employed in weekly doses by intramuscular or intravenous injection of 1 to 3 grams (0.04 to 0.05 gram per kilo body weight) until a total of 20 to 30 grams have been given The danger of producing or increasing optic atrophy already present must be remembered.

Malaria has little effect in cases of Juvenile G P I. which should therefore receive arsenical treatment

GLANDULAR FEVER (Infective mono-nucleosis)

The treatment of this condition is symptomatic The patient should be kept in bed until the temperature has subsided and the majority of the glands have diminished in size Sodium Salicylate or Aspirin may be given and gargles are required for sore throat.

A period of convalescence is necessary and during this time Iron or other tonics should be given

In view of its infectivity the patient should be kept away from children during the acute stages e.g. 1 week

In view of the fact that Sulphapyridine has been employed, a word of warning that some cases are accompanied by agranulocytosis is necessary If used, a most careful watch must be kept on the white cell and absolute polymorpho nuclear counts

The diagnosis should be confirmed by the Paul Bunnell test

GOITRE, PARENCHYMATOUS

PROPHYLAXIS

The use of Iodized table salt

TREATMENT

1 Iodine in the form of

(a) Lugol's Iodine commencing with a dose of 2 minims and increasing up to 5 or even 10 minims three times a day

(b) Potassium Iodide 5 grains t.d.s. for 2 to 3 weeks

After an interval of 2 weeks the course may be repeated and continued with the above intervals for 3 months

N B—Overdosage with Iodine may produce symptoms of thyrotoxicosis (see page 326)

2 Thyroid, especially if there is any evidence of deficiency Thyroid, $\frac{1}{4}$ grain, daily, increased $\frac{1}{4}$ grain at weekly intervals until a total of 1 to $1\frac{1}{2}$ grains daily are being taken

3 Surgical measures may be required for dyspnoea, substernal goitre and failure to react to medical treatment

GONORRHOEA (FEMALE)

Acute Stages. During the first week two points are essential

1 Complete rest in bed

2 Adequate drainage of the urogenital tract by placing the patient in Fowler's position

Local Treatment

1 Frequent hot Sitz baths containing 1 drachm of Sodium Bicarbonate to each pint of water

2 Daily vaginal irrigation with weak antiseptics such as Potassium Permanganate, 1 in 8,000, or Dettol, 1 in 100, at a temperature of 106° F These should preferably be given by a nurse and the patient discouraged from douching herself

3 Zinc Cream is useful for soreness of the vulva

4 For pruritus, equal parts of Calamine lotion and 1 in 40 Carbolic Acid may be used.

5 Twice weekly the cervix should be cleansed with a saturated solution of Sodium Bicarbonate and followed by painting the cervix and urethra with a silver salt such as Protargol in Glycerin

6 Proctitis requires daily irrigation, and tri weekly painting with 10% Silver Nitrate

General Treatment

The modern routine treatment is the administration of Sulphapyridine or one of the allied drugs in adequate dosage from the onset (Page 319)

The patient should take as much fluid as possible and avoid alcohol, strong coffee and spices The bowels should be kept open. Potassium Citrate 30 to 60 grams, should

be given in mixture form three times a day or four hourly and, when cystitis or urethritis are severe, Buchu and Tincture of Hyoscyamus may be added for the relief of symptoms

e.g.	R. Potassa Citrat	gr 30 to 60
	Tinct Hyoscyami	m 30
	Infus Buchu	ad 1 oz.
or	R. Potassa Citrat	gr 30 to 60
	Tinct Hyoscyami	m 30
	Infus Buchu	m 30
	Aq Chloroformi	ad 1 oz

Pyridium is another useful drug for this purpose

After 3 weeks, the irrigations may be reduced to twice weekly and the cervix may be painted once a week

COMPLICATIONS

When the Fallopian tubes are infected the temperature of the vaginal douche may be raised to 115° F. When this is given the vulva should be protected with Vaseline

Chronic Stages.

Improvement may often be obtained by painting the cervix with a mixture of equal parts of Picric Acid and Glycerin at weekly intervals. The probe must be passed through the internal os to ensure that the whole of the endo-cervix is treated. Infection within the uterine cavity may be treated with intra uterine injections of 2 to 4 oz of Glycerin after dilatation of the cervix. If there is no salpingitis diathermy of the cervix is often useful. Sulphapyridine is also given

Under no circumstances should the patient be pronounced cured until gonococci and pus cells have been absent from three successive cervical and urethral smears. Films should be taken within 48 hours of the end of a menstrual period.

GONORRHOEA (MALE)

The following is a brief outline of treatment

Acute Urethritis

1 The routine treatment at present employed is the administration of Sulphapyridine or one of the allied drugs

Eg 1 gram three times a day for 4 days.

0.5 gram three times a day for 7 days

At the same time there is a tendency to reduce the amount of local treatment given

2 Give anterior urethral wash-outs with Potassium Permanganate 1 in 8000 twice daily for the first 2 days

3 After the second day give posterior wash outs twice daily until the discharge ceases

4 The patient should rest as much as possible during the acute stages and confinement to bed is advisable in some cases if it can be arranged. Copious fluids should be taken together with the following mixture

R Potass Bicarb	gr 15
Infus Buchu Conc	m 20
Tinct Hyoscyami	m 20
Spt Chloroformi	m 10
Inf Uva Ures	ad 1 oz t.d.s

If *epididymitis* occurs the wash outs should be stopped. Daily hot baths should be taken. The scrotum must be supported and the following lotion applied

R Spt Van Meth.	dr 2
Lotio Plumbæ	ad 1 oz.

The following mixture should be given

R Ol Santal Flav	m 15
Potass Bicarb	gr 10
Pulv Acaciæ	gr 5
Tinct Aurant	m 10

Aq ad 1 oz t.d.s

N B—Mix the Pulv Acaciæ with Ol Santal in a mortar. Add a small quantity of water and mix to a paste. Gradually add the remainder of the water and the Pot Bicarb in solution

For *Prostatitis*, wash-outs should also be omitted. Hot Sitz baths should be taken twice daily, and rectal lavage with hot Boric lotion given. In order to relieve pain suppositories containing Morphia ($\frac{1}{4}$ grain) and

Atropine ($\frac{1}{2}$ grain) may be employed twice daily. Give Oil of Sandalwood as in the last mixture

Gonococcal vaccines are especially useful in arthritis and epididymitis, and may be commenced with a dose of 50 million gonococci and increased gradually to 400 million at weekly intervals

GOUT

1 Acute Attack.

Local Treatment The affected part should be elevated or supported on pillows, the weight of bedclothes carried by a cradle and the joints wrapped in cotton wool.

Hot fomentations, fomentations wrung out of Sodium Bicarbonate lotion (dr 1 or 2 to 1 pint) to which 1 oz of Tinct Opu has been added, Lead lotion, Methyl Salicylate liniment or the following may be applied

R Spirit. Vini Meth vel Rect } as dr 3
 Liq Ammon. Acetat . }
 Aq Rosæ ad 12 oz

Diet. The patient should take a light diet having a basis of milk and farinaceous foods. Alcohol, meat and meat extracts must be avoided, but plenty of fluids should be taken

Bowels should be opened with saline aperients

Drugs The most useful drug, which appears to act specifically, is Colchicum. This should not be taken in full doses for more than 4 days as it is a gastro intestinal irritant and may produce diarrhœa

R Vinum Colchici m 30
 or
 Tinct. Colchici m 15
 Extr Glycyrrhizæ Liq . . . dr 1
 Syrup Limonis dr 1½
 Aquam ad 1 oz t.d.s

or R Tinct. Colchici m 10
 Soda Salicyl. . . . gr 15
 Pot. Iodidi gr. 5
 Aq Chloroformi ad 1 oz t.d.s.

or	R. Tinct. Colchici	.	.	m	10 to 15
	Potas Citratis	.	.	gr.	30
	Mag Sulph	.	.	gr	30
	Aq Ment. Pip	.	.	ad 1 oz	t d s

For sleeplessness, Soluble Barbitone (Medinal), 10 grains, with Aspirin, 10 to 15 grains, will be found useful. Morphia and its derivatives should be avoided.

2 Chronic Gout and between Attacks.

General Hygiene. An attempt should be made to improve the general health. Regular exercise and regular meals are necessary. Alcohol should be avoided, but if insisted on is best taken in the form of whisky or still white wine. Beer, port, sherry and champagne should be forbidden.

Diet. This should aim at simplicity. A reasonable amount of meat, fish and chicken may be allowed (e.g. one meal a day). Avoid especially articles rich in purins such as sweetbreads, liver, kidneys, also pork, high game, duck, goose, salmon, mackerel, lobster and crab. The following fruits and vegetables should be taken very sparingly: rhubarb, beetroot, mushrooms, and tomatoes. *Highly seasoned dishes and rich pastry are inadvisable, and tea is more desirable than coffee.*

Plenty of fluid is necessary and a glass of water should be taken on rising and retiring. In addition, various natural mineral waters are useful.

Bowels. Regulation of the bowels is essential and may be achieved by giving occasionally an aperient at night such as Calomel or Colocynth, followed by a morning saline.

Drugs. Potassium Citrate, 15 to 30 grains should be given. The following mixture is also useful.

R. Tinct. Guaiaci Ammon.	m	20
Potassu Iodidi	gr	5
Syrup	dr	1
Tragacanthæ.	gr	1
Aq Cinnamomi	ad 1 oz	t d s

Some cases appear to be improved by Sodium Salicylate. Atophan (Cinchophen), 10 to 15 grains, t d s, increases the excretion of uric acid, but it must be remembered that it is a dangerous drug which may produce acute yellow

atrophy of the liver with fatal results. It should only be taken under strict medical supervision. It should never be used when there is a previous history of liver damage. During its administration plenty of Glucose should be taken and Calcium may be given by mouth or by injection. A safe rule is to give the drug on 3 days a week for 3 weeks and then to allow an interval of 2 to 3 weeks before resuming it. By its use the tendency to recurrent acute attacks is avoided.

Local Treatment Light massage, radiant heat, infra-red rays etc., relieve pain and improve movement.

Spa Treatment Much benefit may be obtained in chronic cases as a result of the regular life, dieting and physical measures which are adopted. Bath, Buxton, Strathpeffer and Harrogate (the latter if skin lesions are present) are among the best-known British spas. Spa treatment is contra-indicated in the presence of myocardial degeneration, advanced arteriosclerosis and renal disease. As a rule, Turkish baths are undesirable.

HÆMATEMESIS

By far the commonest cause of hæmatemesis is peptic ulcer (acute or chronic) and the case must be treated on this basis unless some other malady is clearly responsible.

1. Keep the patient absolutely quiet in bed with one pillow. Raise the foot if marked collapse be present and apply heat with hot blankets or an electric cradle.

2. Inject Morphine, $\frac{1}{2}$ to $\frac{1}{4}$ grain. The addition of Atropine, $\frac{1}{100}$ grain, has the advantage of diminishing the secretion of HCl. Moving the patient to a nursing home or hospital in a state of collapse is not without serious danger. In any case it is wise to give Morphine first.

Some authorities prefer Papaveretum (B.P.G.), gr $\frac{1}{2}$, combined with Hyoscyamine Sulphate, gr $\frac{1}{16}$, which are less likely to produce pyloric spasm and vomiting.

3. Rectal injections of 15 to 20 oz. of Glucose saline every 4 to 6 hours should be given.

4. A blood grouping test should be carried out without delay, and blood transfusion must always be given if the

hæmoglobin is in the region of 20% or the red cells are below 1,500,000 per cu mm Transfusion should be given in any severe case irrespective of whether the blood count has fallen as low as this (e.g. hæmoglobin 30-40%) and is necessary if operation is decided on In spite of the theoretical objection that transfusion will cause a rise in blood pressure and thereby increase bleeding experience has shown that this is not the case provided blood is given by the drip method (30 to 40 drops per minute or 1 pint in 4 to 5 hours) About 3 pints will be required to raise the hæmoglobin level from 40% to 60%

5 Food by mouth is withheld for 36 to 48 hours, but 2 oz of water or a little ice to suck may be given every hour with safety from the commencement Chewing gum is of value in stimulating the flow of saliva and keeping the mouth moist

After 36 to 48 hours commence feeding with citrated milk, 1 or 2 oz every 2 hours Increase the amount of the feeds by 1 oz daily so that 6 oz are being taken by the end of a week Glucose or Gvaltine may be added Then continue with a first week gastric diet (see page 247)

6 Injections of Calcium (e.g. Calcium Gluconate) or hæmoplastic serum may be given Their beneficial effect is doubtful, but they can do no harm

7 Give Magnesium Trisilicate dr $\frac{1}{2}$, or similar alkaline powder (see page 217) every 2 hours after the first 36 to 48 hours have elapsed

8 The bowels may be opened by enemata after the first four or five days and Liquid Paraffin subsequently given by mouth

9 As a rule, radiological examination may be made after 3 weeks

10 Residual anæmia should be treated by giving Ferri et Ammon Cit, 30 grains t.i.d., by mouth which may be commenced three or four days after the hæmorrhage

Meulengracht's Diet An entirely different method of treating cases of hæmatemesis and melæna where there is severe bleeding has recently been introduced with successful results

The patient is allowed a liberal diet from the onset of the hæmorrhage. The food is of a purée type and meals are given as follows

- 6 a.m. Tea, white bread and butter
- 9 a.m. Oatmeal with milk, white bread and butter
- 1 p.m. Dinner
- 3 p.m. Cocoa
- 6 p.m. White bread and butter, a meat dish, cheese and tea

For dinner any of the following are allowed—meat balls, boiled chops, omelettes, fish balls, vegetable, meat or fish gratin, mashed potatoes, vegetable purée, stewed apricots, gruel, rice, tapioca. The quantities are not restricted.

A modification of this diet consists of eight feeds daily, made up of milk, cream, porridge, eggs, fish, crustless white bread and butter, strained tomato and orange juice, with fruit vegetables in purée, marmite, Cod liver Oil with Malt. Each feed should not exceed 5 oz of milk and 2 oz of purée. Between feeds, water with glucose, or half-strength isotonic saline may be taken in amounts not exceeding 5 oz.

The administration of atropine, alkalis and iron are continued.

SURGICAL TREATMENT

The majority of cases do well with medical treatment, but it is probable that a few fatal cases could be avoided by timely surgical intervention. The decision as to whether to follow a medical or surgical line of action must be made early and operation should be carried out if possible within 48 hours of the onset of hæmorrhage and not as a last resort.

The main indication to operate is the occurrence of bleeding from a chronic ulcer in a patient with hard and degenerated arteries which are therefore less likely to contract and allow clotting. A history of previous hæmatemesis or if the patient is known to have pyloric stenosis weigh the balance in favour of surgery.

Operation should be carried out under local or very

light general anaesthesia and facilities for repeated or continuous drip blood transfusion up to 6 pints in 48 hours must be available

An operation may be indicated if occult blood persists in the stools for some weeks after hæmatemesis in spite of thorough treatment

HÆMATURIA

The treatment of this condition must be referred to the cause which may arise (a) in any part of the urinary tract (b) as a result of spread of the disease from a neighbouring viscus or (c) as a manifestation of some general disorder or toxic process

In some instances the cause may be obvious other cases demand full investigation of the urinary tract by X ray cystoscopy and pyelography together with estimation of the renal function including microscopical and bacteriological examination of the urine In addition examination of the cardiovascular system and the blood may be advisable

Surgical interference may be necessary for rupture of the kidney new growths and calculi

In the absence of indications for operation give

1 *Morphia* for severe hæmorrhage unless there is reason to suspect impaired renal function (e.g. advanced nephritis)

2 Calcium Lactate 15 grains every 4 hours or Calcium Gluconate by intramuscular or intravenous injection

Vesical hæmorrhage may be controlled (a) by irrigation of the bladder (after withdrawing the blood-containing urine) with 1 in 10 000 Silver Nitrate solution using a few ounces at a time or (b) the introduction of a few c.c. of 1 in 1000 Adrenalin after the bladder has been emptied

Severe hæmorrhage causing distension of the bladder with large clots may require supra pubic cystotomy

HÆMOPHILIA¹

The best method of arresting hæmorrhage is prolonged pressure on the bleeding point if it is accessible. The application of fresh human blood on cotton wool swabs is valuable. Adrenalin applied locally may also be tried.

For intestinal bleeding an injection of Pituitrin ($\frac{1}{2}$ to 1 c.c.) has been recommended.

It has recently been found that diluted Snake Venom obtained from Russell's viper is the most effective local application for producing hæmostasis in this condition. This is supplied by Burroughs Wellcome & Co. as 'Styp-ven' and should be used whenever possible.

For severe anæmia, and in order to counteract the tendency to hæmorrhage, transfusion of citrated blood is necessary. Liver therapy is also recommended.

True hæmophilia is a familial disease affecting the males but transmitted by the females who should therefore, be warned before marriage that they may pass on the disease and that they should not have children.

HÆMOPTYSIS

1 Without unduly disturbing the patient an attempt should be made to determine the cause of the bleeding and, if possible, the lung from which it is arising.

2 Not all cases need active treatment. If there is only slight staining of the sputum or the hæmorrhage occurs as a complication of mitral stenosis as a rule adequate rest is all that is required. In the absence of any other obvious cause, it is wise to assume that the bleeding is a manifestation of pulmonary tuberculosis until it can be fully investigated.

3 In severe hæmoptysis the patient should be placed at absolute rest in bed, preferably lying on the affected side with the shoulders slightly raised and the head low.

4 The patient should be calmed and the relatives reassured, a single hæmoptysis in pulmonary tuberculosis being rarely fatal. Warmth should be supplied by hot-water bottles to the feet and abdomen.

5 It is a common practice to give Morphia in every case of hæmoptysis. Its main advantages are to calm the patient and to allay cough, and for this purpose, therefore, it should only be given in small doses e.g. $\frac{1}{2}$ grain, or it may be replaced by Diamorphine, $\frac{1}{2}$ to $1\frac{1}{2}$ grain. Larger doses are sometimes detrimental to the patient. Atropine, $\frac{1}{100}$ grain, may be added.

6 An injection of Pituitrin, 1 c.c., is often effective in stopping the hæmorrhage and, in the opinion of the writer, is worth trying before giving Morphia.

7. In the first place the diet should consist of cold liquids given in quantities of 3 or 4 oz. every 4 hours. Ice may be given to suck in the intervals.

According to the cause and severity of the condition, the diet is gradually increased and the patient allowed to do more for himself in the course of several days.

8 When the initial bleeding has ceased, a linctus may be given to control the cough.

9 In severe hæmorrhage intravenous injections of Calcium Gluconate may be given.

10 Inhalations of Amyl Nitrite are sometimes useful in controlling severe bleeding especially when the blood pressure is high.

11 The induction of an artificial pneumothorax will sometimes save life in repeated hæmoptysis if the site of the bleeding can be ascertained and a reasonable degree of collapse obtained. In chronic pulmonary tuberculosis the presence of adhesions may render this impossible.

HÆMORRHOIDS

A thorough physical examination should always be made in every case of piles in order to exclude organic disease which is liable to cause back pressure in the portal circulation, e.g. cardiac disease, cirrhosis of the liver or malignant disease of the abdomen. A local inspection is also necessary to establish the absence of anal fissure, fistula, condylomata, etc., conditions which require appropriate treatment.

External Piles

Under local Procaine Hydrochloride (Novocaine) or general anaesthesia the apex of the swelling may be incised or snipped off with a pair of sharp scissors and the contained clot evacuated.

Internal Piles

Palliative treatment may be afforded by rest in bed, a light diet and mild laxatives combined with Liquid Paraffin in order to keep the motions soft. Ungt Hamamelidis or Ungt Galli cum Opio (B.P.) may be applied. A Tannic Acid suppository is useful if there be much hæmorrhage. A number of proprietary ointments and suppositories are also available, e.g. Adrenalin and Chloretone ointment (Parke Davis), Anusol suppositories (Warner).

After a bowel action the parts should be cleansed with wool or, if only paper is available, this should be softened by dipping it in water.

Whenever a pile prolapses, it should be returned within the sphincter as soon as possible and the patient should be advised accordingly.

INJECTION TREATMENT

The main indications for this line of treatment are

- 1 Early cases, with only occasional bleeding or prolapse
- 2 When operation is inadvisable on account of the general condition or when the patient is unable to afford the necessary time
- 3 In nervous patients who fear operation

It is definitely contra indicated.

- 1 In the presence of other lesions such as fissure or fistula
- 2 When there are multiple piles with marked hæmorrhage or excessive prolapse

This method commonly in use is to inject one of the following solutions with a special syringe under direct vision afforded by the passage of a suitable speculum.

(A) 20% Carbolic Acid in equal parts of Glycerin and distilled water. 2 to 6 minims of this solution are injected into the centre of the pile.

(B) 5% Carbolic Acid in Almond Oil 2 to 5 c c of this weaker solution may be injected under the mucous membrane at the upper part of the pile

The latter solution is preferable and is less likely to be followed by ulceration etc

It is rarely advisable to inject more than one pile at a time and one or two injections into each is usually sufficient

OPERATIVE TREATMENT

In most cases ligation gives satisfactory results

HEAD INJURY

The treatment of head injuries is of both medical and surgical interest and may often be a source of great anxiety. The term concussion may be used for relatively mild injuries in which the cerebral circulation is arrested for a brief period with loss of consciousness lasting only a few minutes. More severe cases must be regarded as due to cerebral contusion which in the most severe instances may be associated with cerebral compression.

In any case, actual fracture of the skull is of less importance than damage to the cranial contents and it must be remembered that severe cerebral laceration may occur without bony injury.

1. EMERGENCY TREATMENT

Frequently only a cursory examination can be made at first and the most severe cases often prove fatal in spite of therapeutic measures.

In the first place the patient must be kept warm and placed in such a position that respiration is not obstructed. The clothing about the neck should be loosened. Hæmorrhage from the scalp may be controlled by digital pressure a short distance away from the edges of the wound until suitable dressings can be applied.

It is often wise to delay the removal of the patient for a while until he shows signs of recovery from the initial shock and the pulse has improved.

Stimulants should be avoided, for any measures which raise the blood-pressure may increase the risk or degree of intracranial hæmorrhage.

When the patient is put to bed he should be kept warm in a darkened room and, if collapse is severe, the foot of the bed should be raised. If respiratory embarrassment be marked, Strychnine may be injected. Restlessness must be prevented, for it is liable to raise the blood-pressure and encourage intracranial hæmorrhage. Chloral and Bromide are the safest drugs to use for this purpose, but Morphia is also valuable in this state and may be given with safety, provided there is no respiratory embarrassment and the patient is allowed to recover from the effects of each dose before it is repeated. Opportunity is thereby afforded of observing any change in his condition which otherwise might be obscured by the influence of the drug.

When there is any leakage of blood or cerebrospinal fluid from the ear, the external auditory meatus should be cleaned with a mild antiseptic, e.g. Perchloride of Mercury, 1 in 1000, and lightly plugged with a pledget of gauze or wool soaked in the same solution. Under no circumstances should syringing be performed.

When any communication between the interior of the cranium and the exterior is suspected it is wise to give a prophylactic course of Sulphanilamide.

A full neurological examination should be carried out as soon as it is convenient and the patient has recovered sufficiently. The degree of coma may be estimated by the state of the corneal and pupillary reflexes, the response to pinprick and the degree of flaccidity of the limbs. The pulse-rate and blood-pressure should be carefully observed at intervals.

2 MILD CASES.

Very little further treatment is required. If the degree of concussion has been sufficient to produce a definite period of loss of consciousness, the patient should be confined to bed in a quiet room and relieved of all business worries for 2 to 3 weeks, or even longer. By this means the possibility of sequelæ is diminished. Potassium Bromide

or Phenobarbitone may be given during this period, and Aspirin or Veganin may be required for headache

3 VERY SEVERE CASES

In such instances there is immediate deep coma which increases. Respiration is stertorous, while the pulse rate and blood pressure continue to rise. The temperature may also be elevated. The pupils are usually dilated and fixed. A fatal result may be expected in view of the involvement of the vital centres and no operative or other measures are of any avail.

4 INTERMEDIATE CASES

These form a large group, the management of which is often difficult. The active measures to be considered are

(a) Lumbar puncture (b) Intravenous therapy

(a) *Lumbar Puncture* As a therapeutic measure, routine lumbar puncture, with the withdrawal of a large amount of cerebrospinal fluid is dangerous but as a diagnostic procedure should be carried out in almost every case when the stage of reaction has developed and consciousness has been restored or shows definite signs of returning. Not more than 5 c.c. of fluid should be removed.

Following lumbar puncture, cases of head injury may be divided into two groups, each of which requires its own line of treatment.

1 Those with raised intracranial tension.

2 Those with low intracranial tension (less common)

It is only by estimating the pressure of the cerebrospinal fluid that they can be differentiated. Although this may be guessed by the rate of flow from the needle, it can only be accurately determined by a manometer. The normal limits of pressure are 100 and 200 mm. of cerebrospinal fluid.

1 **CASES WITH RAISED INTRACRANIAL PRESSURE** The patient should be propped up in bed with the view to using gravity to aid in lowering the tension.

Withdrawal of cerebrospinal fluid in larger amounts is sometimes advised but, if bleeding is severe and the pres

sure very high this may lead to herniation of the medulla into the foramen magnum with fatal results. On the other hand removal of fluid which is mixed with a moderate quantity of blood diminishes the risk of subsequent aseptic meningeal irritation. Carefully considered judgment is necessary before this is done and the amount removed gauged by repeated pressure readings while the fluid flows. In cases of doubt it is wiser to rely on the following procedure.

Dehydration. By the intravenous or rectal injection of hypertonic solutions the intracranial pressure may be lowered. Fluid is withdrawn from the cerebral tissues into the general circulation. In mild cases 6 oz of 25% solution of Magnesium Sulphate may be run slowly into the rectum once or twice daily. More frequent administration may produce local irritation and should this occur a weaker solution must be employed e.g. $1\frac{1}{2}$ oz in 8 oz of water.

In severe cases 50 to 100 c.c. of 50% Glucose or 60 c.c. of a 15% solution of Sodium Chloride or 30 c.c. of a 30% solution of Sodium Chloride may be given intravenously once or twice daily.

In all instances the fluid intake by mouth must be reduced during dehydration treatment and Magnesium Sulphate may be given orally at the same time.

Dehydration is most useful after the first 24 hours, but it should not be pushed too far. It will not save life in the early stages but will be found of great value in reducing restlessness and headache and in perfecting the recovery of consciousness.

If it is decided to employ this measure when there has been no opportunity of estimating the intracranial pressure by lumbar puncture the rectal administration of Magnesium Sulphate is safer than intravenous injection as the fall in intracranial pressure produced is slower and less pronounced and therefore less liable to cause dangerous depression in cases in which it is already low.

2 CASES WITH LOW INTRACRANIAL PRESSURE (e.g. below 100 mm C.S.F.)

The recumbent position must be maintained and in severe cases the foot of the bed should be raised. With

drawal of more cerebrospinal fluid than is necessary to determine the pressure is *contra* indicated.

Intravenous injection Hypotonic fluids may be employed in severe cases e.g. Hypotonic saline or sterile distilled water

OPERATIVE MEASURES

For the details of operative procedures and their indications larger works must be consulted. The main indications may be briefly stated

1 Local toilet of wounds in compound fractures of the vault

2 In cases of middle meningeal hæmorrhage These usually show the classical features of loss of consciousness followed by a lucid interval which may be very brief in duration and finally increasing coma

3 Certain cases of depressed fracture especially when signs of local cerebral irritation are present In the absence of such signs there is a tendency to adopt conservative measures

4 Cases of cerebral contusion with persistent localizing signs not necessarily associated with fracture

5 Cases of chronic subdural hæmatoma This sometimes follows relative slight trauma and the onset of symptoms may vary from a few days to several weeks after the injury Bilateral clots are sometimes found.

HEART DISEASE

The general principles of treatment in heart disease are the same irrespective of the type or cause of the lesion their objects being

- 1 To maintain the efficiency of the myocardium
- 2 To avoid adding to the gravity of the existing lesion.
- 3 To treat cardiac failure and disorders of rhythm when present
- 4 To relieve symptoms as they arise

While skilful treatment is so important and prompt therapeutic measures may prolong life for many years

excessive restriction of the activity of a patient with a minor valvular lesion which is well compensated by a healthy myocardium is not only unnecessary but may produce introspection and neurotic manifestations

(a) *Prophylaxis* The two most important causes of heart disease are rheumatic fever and syphilis, and adequate treatment in the early stages of these conditions will do much to modify the incidence and severity of cardiac sequelæ

(b) *General management of cases with good compensation* The guiding rule, as in all types of cardiac disease, is to restrain the activities of the patient so that he always lives within the limits of his heart's strength. That is, he undertakes no exertion which is followed or accompanied by breathlessness, palpitation, fatigue, precordial discomfort or pain, and sudden effort is avoided at all times. He must lead a quiet and carefully regulated life, avoiding excess of alcohol, of tobacco and of sexual intercourse

(c) *Employment* Whenever possible a suitable sedentary occupation should be obtained, e.g. as a clerk, cashier, salesman, time-keeper, tailor, etc. At the same time, excessive mental strain, worry and emotional excitement are to be avoided.

(d) *Clothing* Warm or thick underclothing, with a light overcoat is better than using a heavy overcoat. The back of the waistcoat may be made of woollen material. Woollen socks and waterproof footwear are important. A climate with low rainfall, plenty of sunshine and a gravel or sandy soil is ideal. Entering a warm bedroom and a warm bed in the winter often prevents the onset of cough at night. Cold and very hot baths are to be avoided. Fresh air and good ventilation are essential but patients should avoid draughts and chills because coryza may be followed by bronchitis and its associated cardiac strain.

(e) *Diet* In the absence of cardiac failure, arterio-sclerosis, and renal disease, little modification in diet is required. As a rule, three evenly balanced meals, with a glass of hot milk or Ovaltine for supper are best. The

patient should be instructed to eat slowly, to masticate thoroughly and to rest for half an hour after each meal. Flatulence and distension of the stomach should be avoided. The fluid intake should not exceed 50 oz daily and is best taken between meals. Alcohol is unnecessary but, in the absence of contra indications, light wine or weak spirit may be taken with food if the patient so desires. Moderate tobacco consumption may also be permitted provided it does not cause symptoms.

Vitamin C (Ascorbic Acid) appears to have a diuretic effect in heart failure and some therapeutic value. The diet should therefore contain an adequate amount of lemon or orange juice unless Vitamin C is supplied in a prepared form, e.g., Redoxon, Cantan.

Constipation and associated straining at stool should not be permitted to occur. Saline aperients or Liquid Paraffin are usually suitable.

(f) *Rest and Exercise* Ten hours in bed should be the rule, with half an hour's rest after each meal or an hour's rest in the middle of the day.

The limit to the amount of exercise permitted in any cardiac case is determined by the onset of breathlessness. Exercise within these limits is beneficial, provided there are not special symptoms or complications such as pulmonary congestion, œdema, or hepatic enlargement. Carefully graduated exercises are necessary after a patient has been confined to bed following a slight degree of failure or some intercurrent condition, and may with advantage be preceded by massage for a few days.

DISORDERED ACTION OF THE HEART

Extra-systoles. It is important to decide whether or not extra systoles are connected with organic heart disease. Many individuals are unconscious of their occurrence and, in such instances, no special treatment is required unless it be for an associated condition such as myocardial degeneration, arteriosclerosis or tobacco poisoning.

If the patient is worried by their presence he should be

reassured, the general health should receive attention and any obvious cause such as excess of tobacco or dyspepsia remedied

Potassium Bromide 10 to 15 grains t.d.s. often diminishes their frequency or Quinidine Sulphate 2 grams t.d.s., may be tried.

There is no indication to employ Digitalis

An electrocardiogram may be of value in determining the state of the heart muscle

AURICULAR FIBRILLATION

The majority of cases fall into two groups

(1) Those with a history of rheumatic fever and subsequent valvular disease especially mitral stenosis

(2) Those with myocardial degeneration arteriosclerosis or following thyrotoxicosis

The aims of treatment are (1) By means of drugs of the Digitalis group to slow the ventricular rate thereby allowing adequate filling of the ventricle improvement in the general circulation and a longer period of diastolic rest for the ventricle (2) In suitable cases restoration of the normal rhythm by means of Quinidine

The general management of the case must be carried out on the lines previously indicated for cardiac conditions. Further therapeutic measures may be necessary for associated symptoms of cardiac failure (page 166)

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The Administration of Digitalis

THE SMALL DOSE METHOD (routine)

1 Commence with moderate doses of a reliable preparation of digitalis, e.g. Tinct. Digitalis 15 to 20 minims every 6 hours

2 Continue until the pulse rate falls to 80 or signs of intolerance develop when the drug should be omitted for a time

3 Recommence with half the original dose of tincture three times or even twice daily This dose can be increased or diminished slightly to suit the requirements of the individual patient and to maintain a pulse rate of 60 to 80 per minute which approximates to the cardiac rate at the apex

When using Digitalis it is best to assess its effect by counting the heart rate with a stethoscope rather than by relying on the rate at the wrist

If *cardiac failure* be present and Digitalis has not previously been taken either of the following two methods may be employed

(a) In very urgent cases of failure when a rapid effect is desired Strophanthin $\frac{3}{16}$ to $\frac{1}{16}$ grain may be given slowly by the intravenous route preferably in 5 to 10 c c of sterile saline (Subcutaneous or intramuscular injection produces local irritation of varying severity) $\frac{1}{16}$ grain may be repeated in 12 to 24 hours if necessary Some effect is usually obtained within a few hours but this drug must not be employed if Digitalis has been taken within the preceeding two days

Oxabain 0.5 milligram may also be given intravenously but Digoxin (*vide infra*) is preferable to either

(b) THE LARGE DOSE METHOD

Provided Digitalis has not been taken within 2 days the following method may be employed instead of using Strophanthin Give either (a) $1\frac{1}{2}$ drachms of tincture of Digitalis for the first dose 1 drachm for the second dose 6 hours later and $\frac{1}{2}$ drachm for the third dose in another 6 hours The administration of the drug should then be stopped for a time and resumed later in smaller doses when its effect has been observed

Or (b) give 1 drachm of Tincture of Digitalis six hourly for 4 doses during the first 24 hours Then $\frac{1}{2}$ drachm six hourly for 4 doses during the next 24 hours A reaction will be obtained within 12 to 36 hours When the pulse rate commences to rise again regular smaller doses should be commenced

These methods are not devoid of the risk of overdosage and should only be employed in cases of heart failure of extreme urgency when there has been no previous administration of Digitalis and the patient can be kept under careful observation

Preparations of Digitalis

The following may be used

1 A physiologically standardized alcoholic tincture (B P) which is best kept undiluted and taken in water. When freely diluted with water the active principles are apt to undergo decomposition. It is a good plan never to prescribe Digitalis in mixtures with other drugs

2 Powdered leaves i.e. Digitalis pulverata, $\frac{1}{2}$ to $1\frac{1}{2}$ grain, single dose, 3 to 10 grains (1 grain = 10 m of Tincture, approx)

3 Netivelle's Digitalin. A very convenient and reliable method of administering the drug over prolonged periods, especially in cases which show gastric intolerance to other preparations. ($\frac{1}{10}$ grain corresponds to 10 minims of Tincture)

4 Digoxin. This is a powerful and reliable glycoside which may be employed both in the treatment of acute congestive heart failure due to auricular fibrillation, and in the maintenance stages

In cases of acute congestive failure, Digoxin, 1 milligram, by mouth, will produce slowing of the ventricular rate in 6-8 hours. 0.25 milligram may then be given every four hours until the pulse rate falls to 80. A maintenance doses of 0.25 milligram once or twice a day is usually sufficient

In very urgent cases, 0.75-1.0 milligram may be given slowly by the intravenous route in 10 to 20 c.c. of normal saline or a single massive dose of 1.25-1.5 milligram by mouth (depending on the weight of the patient)

5 If Digitalis is followed by digestive disturbances, Tincture of Strophanthus 2 to 5 minims. Ouabain, 1 milligram (2-4 mg daily), or Tincture of Squill, 5 to 30 minims, may be substituted

Toxic Symptoms

A dose of Digitalis requires about 6 hours for absorption from the stomach so that it should not be repeated at more frequent intervals. Three to four days are ordinarily required for a pharmacological effect upon the heart.

The main toxic symptoms which call for temporary cessation of the drug and subsequent reduction of the dosage are

- 1 Nausea vomiting anorexia diarrhoea
- 2 Undue slowness of the pulse (below 60)
- 3 Coupled beats (pulsus bigeminus)
- 4 Diminution of urinary secretion

Patients on regular doses of Digitalis should be advised to omit the drug every seventh day a procedure which diminishes its cumulative effect.

Digitalis is contra-indicated in cases of partial heart block.

Intravenous injections of Calcium Gluconate are said to be especially dangerous in patients taking Digitalis.

The Administration of Quinidine

This drug is sometimes employed in auricular fibrillation with the object of restoring normal rhythm. The most important factor in Quinidine therapy is the selection of cases but even with the most careful choice the drug is not always successful.

Suitable Cases

- 1 Those in which the onset of fibrillation is recent (i.e. within 6 to 8 months)
- 2 Those of rheumatic or infective origin
- 3 Those in which the valvular and myocardial lesions are only of moderate severity
- 4 Those in which there is no marked cardiac enlargement
- 5 Those in which there has not been more than a minor degree of heart failure which has itself responded to Digitalis therapy especially when the failure has been coincidental with the onset of the abnormal rhythm

Contra-indications

Any one of the following (the converse of the above)
 Long-standing cases with severe valvular lesions, myocardial degeneration and cardiac enlargement Heart block, embolism and hæmoptysis

Dangers Embolism due to detachment of auricular clots Ventricular failure Toxic symptoms including vomiting, diarrhoea, rashes, especially in patients showing idiosyncrasy

Method of Administration

A preliminary period of rest in bed and a course of Digitalis medication are advisable Some authorities continue Digitalis during Quinidine administration others stop it a few days beforehand. The latter is probably the safest course and the drug can be recommenced at any time if Quinidine fails to produce a regular rhythm or signs of heart failure develop The patient must be confined to bed and be free from all physical and mental activity during the administration He should remain in bed for 2 weeks after normal rhythm has been established

Quinidine Sulphate is given by mouth in capsules or tablets in the following way

- 1st day test dose of 3 grains (0.2 gram)
- 2nd day (if no toxic symptoms due to idiosyncrasy)
 6 grains every 3 hours for four doses (total 24 grains)
- 3rd day 6 grains every 3 hours for five doses (total 30 grains)
- 4th to 7th day this dose is continued to the end of the week

If normal rhythm has not been restored in this period by the above dosage the drug will probably not be successful

If normal rhythm is restored the patient should continue to take 5 or 6 grains once or twice a day for a prolonged period a procedure which diminishes the likelihood of a relapse

Indications for discontinuing the drug or reducing the dose during the first week of treatment are

- 1 Restoration of the normal rhythm
- 2 Increase in ventricular rate over 150

3 Slowing of the auricular rate below 250

4 Dimness of vision or other toxic symptoms other than headache which is frequently present during the administration of full doses

N B—It is advantageous to observe the effect of the drug by repeated electrocardiograms whenever possible

It is clear from the above account that although Quinidine should be considered in every case of auricular fibrillation comparatively few will be found suitable and that, in view of its possible dangerous effects, it should only be used by those familiar with its action. Although the drug may restore normal rhythm, it has no effect on the underlying myocardial degeneration. It must be remembered that many cases of auricular fibrillation properly controlled by digitalis can lead satisfactory lives, and that even when normal rhythm has been restored by Quinidine the pulse rate may remain rapid, which is no advantage to the patient.

In *paroxysmal auricular fibrillation*, Quinidine can usually be employed with safety, and should be used if the attack has lasted more than a few hours (3 grains four-hourly). If taken regularly in small doses between attacks (5 grains daily), it helps to diminish their frequency. Only when Quinidine fails should Digitalis be given in full doses.

AURICULAR FLUTTER

This condition is usually difficult to diagnose without the aid of a polygraph or electrocardiogram. Two types occur, permanently established flutter and paroxysmal flutter. The latter is to be regarded as a form of paroxysmal tachycardia. The general principles of treatment for cardiac cases apply in this condition.

For established flutter give *Digitalis* in full doses (e.g. Tinct. *Digitalis* 10 to 20 minims, t.d.s.). In many instances this converts flutter, which is often associated with a regular rhythm, into fibrillation with an irregular rhythm. If normal rhythm does not return spontaneously in a week after fibrillation has been produced, Quinidine should be administered in full doses (method, see page 161). This

drug should not be employed in established flutter until the effects of Digitalis have been tried

In paroxysmal flutter, the attacks may be diminished in frequency by the continued administration of Quinidine in smaller doses (5 grains once or twice daily), as in paroxysmal fibrillation

PAROXYSMAL TACHYCARDIA

The characteristic features of this condition are the abruptness of the commencement and termination of the attacks. Although due to an abnormal irritability of the heart muscle, the condition is not necessarily associated with permanent myocardial damage. Attacks may be very brief consisting of only a few beats or may last, in serious cases, for several weeks. As a rule, the duration is measured in hours.

TREATMENT OF THE ATTACK.

In many instances the patient learns some trick such as the adoption of some unusual posture which will terminate the attack in his individual case. In other instances vomiting or the eructation of wind may be effective. This may be aided by giving the following:

R. Menthol	gr 7
Spt Ammon. Aromat	} aa oz 1
Spt Chlorof	
Tinct Zingiberis	
dr 2 ex aq as strong as possible	

Friction of the chest, an ice bag or fomentations to the precordium are often of value. Slow forced respirations or pressure on the vagus nerve in the neck may be tried first on one side and then on the other.

Recently, Acetylcholine, or preferably Carbachol (Doryl) in doses of 10 to 30 milligrams by subcutaneous injection have been recommended. Mecholyl is often very effective.

If these measures fail, Strophanthin, $\frac{1}{300}$ to $\frac{1}{100}$ grain, may be injected intravenously, or Digitalis may be given by mouth, e.g. Tinct Digitalis, 10 to 15 minims, tds.

In very severe cases Quinidine Sulphate $1\frac{1}{2}$ to 3 grains diluted with sterile saline may be given intravenously, but this is not without some danger.

Chloral and Bromide or even Morphia may be required for sleeplessness in severe cases.

ROUTINE BETWEEN ATTACKS

The general health should receive attention and obvious causes such as excess of tea, alcohol and tobacco or gastrointestinal disturbances remedied. One of the most effective drugs in warding off attacks is Quinidine Sulphate taken regularly in doses of 5 to 6 grains once a day or 3 grains t.i.d. Small doses of Digitalis may also be effective and Bromide may be tried.

In this condition it is always difficult to estimate the efficacy of a particular remedy on account of the tendency to spontaneous cessation and the occurrence of attacks at irregular intervals.

If heart failure supervenes it must be treated on the usual lines. The attacks in themselves are rarely fatal.

HEART BLOCK (including STOKES-ADAMS' SYNDROME)

Heart block may be partial or complete and temporary or permanent in character. Cases fall into one of three groups (i) degenerative (ii) syphilitic and (iii) toxic and inflammatory.

Treatment in the first place is directed to the cause of the condition, thus when occurring during the course of an acute infection such as diphtheria rest in bed is required. The Wassermann reaction should be taken in all adult cases and suitable anti-syphilitic treatment given if it is found to be positive (i.e. a full course of Potassium Iodide with Mercury or Bismuth). The condition itself often produces *no symptoms and may be suspected from undue slowness of the pulse*. It may be confirmed by an electrocardiogram.

An important symptom is the occurrence of Stokes-Adams attacks which are most likely to be present when

the block is partial in type and permanent ventricular rhythm has not been fully established. In these attacks the most useful drug is an injection of Adrenalin (1 in 1000) in doses of 5, 10, or 15 minims. In the rare instances in which the attacks are associated with ventricular fibrillation and consequently with a rapid instead of a slow pulse, Adrenalin would be contra-indicated.

Atropine, Strychnine, and inhalations of Oxygen have been recommended, but their effect is of doubtful value.

Ephedrine, $\frac{1}{2}$ grain, t.d.s., is worth a trial as a prophylactic in cases subject to Stokes-Adams' attacks.

If cardiac failure with œdema be present in complete heart block, Digitalis may be given in the ordinary way, but it must be remembered that as it tends to increase the degree of block present, it should not be employed in cases of partial heart block.

VALVULAR DISEASE OF THE HEART

Cases fall into two main groups, viz. acute and chronic endocarditis.

Acute Endocarditis.

This disease is usually associated with a degree of myocarditis, and may be due to acute rheumatism, chorea, acute specific fevers, etc.

Very little can be done in the way of active treatment for this condition. Measures directed towards the primary cause must be carried out.

The essential measure is prolonged rest in bed (3 to 6 months). The patient is then allowed to get up gradually. Subsequent convalescence should extend over a further period of 3 to 4 months.

The sleeping pulse-rate is often a valuable indication of the progress of the case.

Diet. Milk diet should be given in the early stages. At all times avoid excess of meat and meat extracts.

During convalescence tonics may be given.

Malignant or Septic Endocarditis (see page 110).

Chronic Endocarditis

Cases belong to one of three main groups

- (1) Rheumatic and infective
- (2) Degenerative.
- (3) Syphilitic (see page 318)

General Measures (see page 154)

The amount of activity permitted is entirely dependent upon the efficiency of the myocardium and is indicated by the exercise tolerance of the patient

Digitalis especially in full doses must be used with caution in aortic regurgitation and is only indicated when the condition is associated with mitral disease and cardiac failure

Myocardial Degeneration

General principles (see page 154)

Pericarditis (page 254)

CHRONIC HEART FAILURE

Since chronic heart failure must be taken to include a mild degree of decompensation as well as complete breakdown of circulatory efficiency and its associated symptoms each case must be treated on its merits

The aims of treatment are

- 1 To rest the myocardium as much as possible
- 2 To remove directly or indirectly any mechanical obstruction to the circulation and cardiac action, e.g. *œdema ascites pleural effusion*
- 3 To treat distressing symptoms when they arise

(1) Strict rest in bed in a position as flat as is compatible with comfort is essential until compensation has been re-established

Getting up must be a gradual process preceded by massage and cardiac exercises

In severe cases when dyspnoea or *œdema* are marked the patient should be propped up in bed by using pillows or a back rest. A special cardiac bed, if available is a great advantage. In some instances increased comfort is obtained by leaning forward on a bed table covered with

a pillow on which to rest the head and arms. When gross œdema is present, the patient may prefer to remain continuously in a straight backed chair, an attitude which permits fluid to gravitate to the most dependent parts, thereby allowing greater freedom of cardiac and respiratory action. He should be returned to bed and a semi recumbent position as soon as possible.

Diet. A light, easily digested diet is necessary. In very severe cases it will consist mainly of toast and butter, milk, gruel, arrowroot, Benger's food, malted milk junket, fruit juice, custard and a little fish.

In others eggs, chicken, vegetables and stewed fruit are permitted. Sugar in all forms is valuable and should be taken in large quantities, e.g. barley sugar. Insulin 5 units, given with 10-15 grams of Glucose is said to be beneficial.

Frequent (e.g. three hourly) small meals, taken as dry as possible, are best. When œdema is present the fluid intake is restricted to 2 pints (or less if possible) daily and a salt free diet should be attempted.

Food must not be forced on a patient. Excessive feeding will not benefit him, whereas a quiet stomach, free from flatulence and tolerant of medicine, will help to do so.

General Measures

In order to avoid abdominal distension and straining at stool, the bowels should be kept comfortably open once or twice daily. By producing watery stools when œdema is present, surplus fluid is eliminated from the body. Salines, Calomel, Cascara or Jalap may be employed, but excessive purging is weakening and should be avoided. The quantity of urine passed in 24 hours should be measured and tested especially for albumin.

If auricular fibrillation be present, Digitalis should always be administered (see page 157). It is often of value in cases of failure with a regular rhythm.

SYMPTOMATIC TREATMENT

Œdema

- (a) Restrict fluid intake to 40 oz. or less.
- (b) Salt free diet.

(c) Mild purgation Pulv Jalapæ Co dr I, once or twice daily so that two watery motions are passed in 24 hours

(d) Diuretics

The most efficient diuretic for use in cardiac dropsy is Inj Mersalyl (Salyrgan) a complex compound, supplied as a 10% solution containing $\frac{1}{2}$ grain of Mercury per c c It may be used in conjunction with rest a salt free diet, restriction of fluid intake and Digitalis medication

Its diuretic action is enhanced by Ammonium Chloride which should always be given for 2 days before each injection

R Ammon Chlor gr 15 to 30

Extr Glycyrrh Lq m 15 to 30

Aq ad $\frac{1}{2}$ oz tds

(May be taken in mineral water)

Alternatively a single dose of Ammonium Chloride, 90-120 grains in three ounces of water may be given half an hour before the injection Chocolate coated tablets are also available

Mersalyl may be given in the following ways (a) Intravenously A preliminary dose of 0.5 c c is given If there are no toxic effects e.g. irritation of the skin, diarrhoea, or the appearance of albumin blood or casts in a previously clear urine 1 or 2 c c may be injected the following day and repeated at two, four or seven day intervals as required but as a rule not more than two injections should be given each week (As many as two or three hundred injections have been given over a period of several years) Some practitioners prefer to dilute a 2 c c ampoule with 5 to 10 c c of sterile saline but this appears to be unnecessary if the injection is made directly into the vein Should some of the fluid escape into the surrounding tissues subsequent irritation may be reduced by

(a) Repeated painting of the skin area with

R Oleum Sinapis Vol m 20

Alcohol (96%) ad 1 oz

or (b) Local injection of 1% Procaine Hydrochloride (Novocain)

(b) Intramuscular injection into the upper and outer quadrant of the gluteus maximus (N.B.—Local oedema

should be dispersed by pressure before the injection in order to ensure the needle reaching the muscle. If the injection is painful 2 c c of 1 to 2% Procaine may be introduced after the Mersalyl through the same needle.

(c) Intra peritoneal injection 2 to 5 c c may be injected at the end of paracentesis abdominis provided a considerable amount of ascitic fluid remains *in situ*.

(d) Intra pleural injection At the end of partial aspiration of a pleural effusion 2 c c of Mersalyl may be injected.

The last two procedures are especially valuable when veins are obscured by oedema.

Neptal and Esidrone are similar preparations.

Novurit another complex organic Mercury compound is an active diuretic which may also be given as a suppository and is said to produce less rectal irritation than other preparations. An aperient if required should be given 48 hours before the introduction of the suppository and Ammonium Chloride should be administered during the previous 24 to 48 hours.

There are also preparations for oral administration which are especially suitable for ambulatory cases.

In mild cases one of the following may be tried.

(a) Pil Hydrarg Diuretica (Guy's Pill) 1 c

R. Pil Hydrarg (B.P.)	gr 1
Pulv Scilla	gr 1
Pulv Digitalis (folia)	gr 1

Ft. pil one or two to be taken three times a day

(b) Theobromine and Sodium Salicylate (Diuretin) 10 to 20 grains Theobromine 10 grains in Capsules or Theocin 2 to 5 grains may be given three times a day in weekly courses.

(c) The following diuretic mixture may be used

R. Tinct Scilla	m 15
Tinct Digitalis	m 5
Succ. Scoparia	dr 1
Caffein Cit.	gr 5
Spt Junip	m. 15

Aq ad 1 oz four hourly

(d) Urea 10 to 20 grams as a 40% solution in water twice or three times a day is a powerful and safe diuretic which may be taken for prolonged periods. The draught may be flavoured with lemon or tomato juice.

(2) Vigorous upward massage of œdematous legs two or three times a day may help diuresis and adds to the comfort of the patient when the œdema is of the hard type.

(3) If these measures fail acupuncture a single $\frac{1}{2}$ to 1 inch incision into the subcutaneous tissues on the dorsum of each foot or the introduction of Southey's tubes may be carried out with strict aseptic precautions. The patient should be allowed to sit with the legs dependent so that the fluid can drain into a suitable receptacle for 24 to 36 hours. (Rarely necessary if appropriate doses of mercurial diuretics are employed.)

Paracentesis thoracis or abdominis may be necessary for persistent and distressing pleural effusion or ascites.

(4) In œdema associated with a regular rhythm, high blood pressure and scanty urine—

Sweet Spirit of Nitre (Spt. Ætheris Nitron) dr 1 every hour or Tab Glycerylis Trinitratis $\frac{1}{100}$ grain every 3 to 4 hours may be tried in addition to Digitalis.

II *Dyspnoea Cyanosis and General Venous Congestion*

These symptoms may call for

(1) The administration of Oxygen preferably by the nasal catheter method, B.L.B. mask or an oxygen tent.

(2) Venesection.

The latter procedure is especially valuable when cyanosis and dyspnoea are marked, the veins of the neck are distended and the patient complains of tightness of the chest (right-sided heart failure). It may be repeated in a week or 10 days if necessary.

It is best carried out by using a large bore needle (French's type). As a rule not less than 15 to 20 oz. of blood should be removed, care being taken that a tourniquet applied to the arm is sufficient to compress the veins but not to obliterate the pulse.

In very urgent cases the median basilic or even the external jugular vein may be opened by inserting the point of a scalpel, preferably a curved bistoury or abscess knife, and cutting outwards. Subsequent hæmorrhage can always be controlled by pressure, aided by a skin suture if necessary.

In *cardiac asthma*, attacks of which are most likely to occur at night the patient should sit in the upright position, an injection of Strychnine is sometimes effective in checking a paroxysm.

In very severe attacks, Morphia is the most useful drug and may be combined with Atropine, venesection may become necessary. Regular Digitalis therapy helps to diminish the frequency of attacks. Adrenalin should be avoided.

Insomnia and Cerebral Symptoms

General measures alone will often produce such improvement in the patient's condition that hypnotics are not required, but cases of cardiac failure often suffer from sleeplessness and "if the patient does not get sufficient sleep he will never get well." Hypnotics should be used when the number of hours of sleep falls below six.

Often mild measures such as a single dose of whisky, 1 to 2 oz, or Potassium or Ammonium Bromide, 20 grains, will be sufficient. Occasionally Tinct Hyoscyami dr 1, taken in a little hot brandy and water is effective. Chloralamide 10 to 20 grains, Chloral, 10 to 20 grains, or Soluble Barbitone (Medinal), 7½ grains may also be employed.

Paraldehyde, dr 1 to 2, though unpleasant, is more powerful, ½ oz may be given per rectum if desired.

Morphia, ½ grain increased with caution to ⅔ grain or even 1 grain, may be given with safety, especially if pain be present provided there is no superimposed pulmonary oedema or severe bronchitis.

Pain This is usually cardiac or hepatic in character. If persistent, relief may be obtained by application of a Belladonna plaster, mustard leaf, half-dozen leeches a blister, Antiphlogistine or an ice-bag to the affected part.

More severe cases will require Nephenthe, Morphia or Diamorphine (Heroin).

Vomiting (in the absence of evidence of Digitalis overdose) Commence treatment with a saline aperient Give a milk diet, peptonized or citrated (15 grains to each half pint) if necessary

Iced champagne is sometimes well tolerated If vomiting persists, rectal salines must be employed A Bismuth mixture to which Acid Hydrocyan Dil, 2 to 5 minims, has been added is often useful

Cough and Hæmoptysis For the former a linctus is often required (e.g. Linct. Camph. Co., Linct. Codeinæ)

Hæmoptysis, as a rule, is not dangerous and is often beneficial General treatment, including rest and a purge of Calomel, 3 grains, is usually all that is indicated In severe instances, Morphia and sometimes venesection may be called for

HEART DISEASE IN PREGNANCY

A detailed discussion of this important subject is beyond the scope of the present work, but the following generalizations may be made

Cases fall into two main groups (1) Those seen before the fourth month (when pregnancy is easily terminated if necessary)

(2) Those seen after the fourth month (when premature delivery may be as severe as normal labour)

(1) In the early months, cases with *chronic* valvular disease having no active endocarditis and no evidence of failure should be allowed to proceed. The cardiac aspect of the case is managed on general lines (page 154) If active endocarditis be present or if there is gross cardiac enlargement, with auricular fibrillation and impending failure, the termination of pregnancy must be considered

(2) In the later months the risk of allowing the patient to go to term is no greater than that of terminating the pregnancy Attention must be concentrated on treating any heart failure Delivery may be effected either by Casarean section or by forceps under Ether anæsthesia

The former method has the advantage that sterilization can be carried out at the same time

In any case never terminate pregnancy when severe heart failure is present. Treat the heart failure first

The fact that repeated pregnancy undoubtedly has a deleterious effect on chronic valvular disease may be an indication for terminating pregnancy during the early months in a multipara especially of the hospital class

HEART DISEASE, CONGENITAL

For purposes of general management the clinical division of cases into (1) acyanotic and (2) cyanotic groups is of more value than anatomical classification. There is very little active treatment which can be carried out but generally speaking cases belonging to the first group can live an ordinary life with the exception that competitive athletics should be avoided and care should be taken to prevent the development of a cardiac neurosis

In the second group the prognosis is less favourable and restriction of activity is necessary

In both groups there is a special liability to the development of infective endocarditis and therefore care should be taken to prevent or eliminate focal sepsis

HERPES ZOSTER (Shingles)

1 *Treatment of the Local Lesion*

Many local applications are available but a simple dusting powder is generally sufficient e.g.

R. Ac d Borici	gr 60
Amyli	gr 120
Zinci oxidi	ad 1 oz

The affected part may be protected from injury with cotton wool, or painted with Collodion. Covering the lesion with Elastoplast is also very effective

If the vesicles are already ruptured when first seen an aqueous solution of Picric Acid 1% on lint or an ointment may be applied

R. Ungt Hydrarg Ammon. Dil	} aa part seq
Ungt Zinci	

Calomel or Boric ointment may also be used

If the ophthalmic division of the fifth nerve is affected great care must be taken of the eye which should be carefully washed out at regular intervals Dilute Yellow Oxide of Mercury ointment may be applied to the lids and Cocaine drops instilled for the relief of pain Atropine drops should be used if iritis develops

2 *Relief of Pain*

The most dramatic relief from pain is sometimes obtained by the injection of $\frac{1}{2}$ to 1 c c of Pituitrin This may be followed by a bowel action but, in successful cases freedom from pain often lasts for 12 to 15 hours The injection may be repeated where necessary It is possible that Pituitrin also has a beneficial effect on the local lesions

Otherwise analgesic drugs will be required, e g Aspirin Salicylates Phenacetin Veganin Nepenthe or even Morphine may be necessary A combination of Soluble Barbitone (Medinal) and Aspirin is useful to procure sleep at night

3 *Post herpetic Neuralgia*

This is often very persistent An injection of Pituitrin may be tried but the continuation of analgesics is usually necessary Paravertebral injection of 2% Procaine Hydrochloride (Novocain) has been employed with success The application of X rays to the affected area is also effective in some cases The most useful drug is Quinine in 5 grain doses three times a day Arsenic should be avoided as it may itself produce herpes

Tonics, such as Easton's Syrup should be given during convalescence

HICCOUGH

Of Short Duration

Drawing in the stomach muscles by attempting to drink from the side of a glass furthest away from the mouth breathing in and out of a paper bag drawing the thighs up to the abdomen or pressure on the epigastrium may be effective A carminative such as ginger or peppermint may be given

Persistent Hiccough

If possible the cause of the condition should be ascertained. Firm traction on the tongue for several minutes often cuts short an attack. Amyl Nitrite by inhalation may be tried and Bromide should be given. In very severe cases an injection of Morphia or inhalations of Chloroform may be necessary.

Other remedies include Chloretone 5 to 10 grains Benzyl Benzoate 5 minims in capsules and inhalations of Carbon Dioxide. Injection of the phrenic nerve is reserved for the most severe cases.

HIRSCHSPRUNG'S DISEASE (Megacolon)

The view that the underlying cause of this condition is of neurogenic origin with the secondary development of achalasia of the pelvi rectal or anal sphincters has led to the employment of operative measures which result in interference with the sympathetic nerve supply to the distal colon e.g. lumbar sympathetic ganglionectomy and presacral neurectomy. Compared with earlier attempts at anastomosis or colectomy these operations can be carried out with a low mortality.

In anal achalasia Hurst suggests the daily passage of a rectal tube followed by colon lavage. Preliminary digital emptying of the rectum under general anaesthesia may be necessary. Dilatation of the sphincter muscle may be carried out at the same time. Lavage may subsequently be reduced to weekly intervals. The effect of a spinal anaesthetic may be tried.

HODGKIN'S DISEASE (Lymphadenoma)

Whenever possible the diagnosis should be confirmed by biopsy of a superficial gland which appears to be involved in the disease. (Gordon's test i.e. the production of an encephalitis when affected material from a case of Hodgkin's disease is injected into the brain of a rabbit is worth carrying out, although its importance is not yet fully decided.)

The most useful treatment is application of deep X ray therapy to the affected glands not forgetting that those

of the thorax and abdomen may be involved (The former especially when the cervical and axillary glands are enlarged the latter when the inguinal glands are the first to be discovered. An X ray picture should therefore be taken of the chest for evidence of enlarged mediastinal glands.) Radium is also effective. These measures cannot necessarily be regarded as being curative but they reduce the size of the swellings and often delay considerably the progress of the disease. Repeated courses may be necessary.

Arsenic should be given by mouth in courses lasting 2 to 3 months increasing the dose of Liq. Arsenicalis from 3 minims to 15 minims three times a day. Neoarsphenamine (N A B) may be tried instead but it is difficult to be sure whether it has any advantages. The course of Arsenic should be repeated at intervals.

HYPERTENSION, ARTERIAL

1 Determine the efficiency of the renal and cardiovascular systems (The following account does not refer to cases in which changes in these systems are marked.)

2 Be reasonably frank with the patient and point out the necessity of his co-operation. Although it is often unwise to over-emphasize symptomless high blood pressure the associated arteriosclerosis may ultimately lead to progressive myocardial degeneration and failure so that careful regulation of the patient's activities should be commenced as early as possible. As a general rule females are less severely affected than males and a less strict regime is, therefore, required.

3 Attempts at drastic reduction of pressure are inadvisable.

The treatment in the early stages is directed to general hygiene and diet. Any source of focal sepsis e.g. teeth sinuses should receive attention.

Rest. Adequate mental and physical rest with freedom from worry are essential. In severe cases a preliminary period of rest in bed is valuable, subsequently increasing

exercise graduated according to the tolerance of the patient is necessary, such forms as golf, gardening and gentle riding being generally suitable. Regular breathing exercises aid the venous return to the heart and improve the circulation and should be carried out.

The bowels should be kept comfortably open, but purging is to be avoided. It is most important to avoid straining at stool, an act which not uncommonly precipitates cerebral hæmorrhage. A mild morning saline is the best aperient. An occasional dose of Calomel is also useful and may be given either as a single dose (2 to 3 grains) on one night every week or 10 days or $\frac{1}{2}$ to $\frac{1}{4}$ grain every half to one hour for eight doses.

Diet (1500 to 2000 calories). This should be regulated but not drastically reduced except as a temporary measure in very severe cases. Cases associated with excessive weight are often improved by a regime of restricted diet and increased physical activity. Chicken and fish should be substituted for red meat on 5 days a week. Boiled red meat is better than roast. Meat extracts and meat soups should be omitted. The amounts of eggs, milk, green vegetables and fruit are correspondingly increased. The intake of fat should be moderate. A low salt diet is said to be advisable in severe cases. Alcohol and tobacco are best avoided. Two to 4 pints of fluid including plenty of water, may be allowed and is best taken between meals. Moderation in the use of tea and coffee is necessary.

Periodic venesection (20 oz. every 6 months) is often of great value and is appreciated by the patient. It may be combined with 24 to 48 hours' fast during which orange juice only is taken.

Turkish baths, hot-air baths, foam baths diathermy, and high frequency may be tried and are found useful in certain cases. Many drugs have been employed and new ones are constantly appearing on the market, an indication that the drug treatment of this condition is unsatisfactory. Nitroglycerin, Sodium Nitrite, Erythrol Tetranitrate, Potassium Iodide have all been recommended. Bismuth Subnitrate often produces symptomatic improvement,

although after a course of treatment the actual fall in blood pressure is slight. More recently, Acetylcholine, 0.05 to 0.1 gram daily for 3 weeks at a time by intramuscular injection, has been suggested. Thyroid may be given with advantage in menopausal cases.

Potassium Bromide or Phenobarbitone are useful for restlessness, insomnia and vertigo. The latter is best administered in combination with Theobromine as Tbeominal (Bayer), one tablet two or three times a day.

Potassium Thiocyanate, 1½ grains t.i.d. p.c., for one week, twice daily during the second week, and once daily during the third week, is said to be effective in reducing the blood pressure. It is not without danger but may be tried provided it is stopped if any ill effects are observed during its administration.

Some practitioners find that proprietary preparations, e.g. Detensyl Pacyl, Xanthine derivatives, e.g. Perphyllon, Euphyllin, are useful symptomatic remedies.

Hypertension may be due to previously unobserved thyrotoxicosis requiring subtotal thyroidectomy. (Thyroid must not be given to this type of case.)

(See also Hypertensive Encephalopathy, below.)

Malignant hypertension is of rapid onset and grave prognosis. It is distinguished by high blood pressure (diastolic usually over 140 mm. Hg), frequent albuminuria with some degree of nitrogen retention and the invariable presence of optic disc changes. The treatment is that of the associated left-sided heart failure and pulmonary congestion which generally develops fairly rapidly. Milder attacks require rest and digitalis therapy. Venesection may be necessary and morphia may give relief.

HYPERTENSIVE ENCEPHALOPATHY

Attacks consisting of severe headache followed by convulsions, visual disturbances, temporary paralysis etc. may occur in simple hypertension or in nephritis. In the latter condition they resemble and are often mistaken for uræmia, but the blood urea is found to be low or within

normal limits although in some cases uræmia may co-exist. An additional factor which may cause confusion is the frequent presence of changes in the optic discs including papilloedema, hæmorrhages and yellow deposits which resemble albuminuric retinitis but have a more sharply defined margin.

The attacks are probably due to circulatory disturbances in the brain (spasm of the cerebral arteries or œdema) and may be mistaken for cerebral embolism or thrombosis.

1 Venesection should be carried out (20 oz.)

2 Lumbar puncture should follow venesection. When ever possible the pressure of the C.S.F. should be measured. It is usually found to be high and in these cases 10 to 20 c.c. of fluid should be withdrawn. This should tend to relieve headache, if it aggravates it, the procedure should not be repeated.

3 Morphia is valuable and may be combined with Atropine if œdema of the lungs be present.

4 The intravenous injection of hypertonic saline has been suggested, but would not appear to be without danger in nephritic cases. 6 to 8 oz. of 25% Magnesium Sulphate may be safely given per rectum with a view to reducing intracranial pressure.

5 The fluid intake should be reduced.

6 An inhalation of Amyl Nitrite, followed by Erythrol Tetranitrate, gr $\frac{1}{2}$ three hourly until the blood pressure falls, has been recommended.

7 The after treatment includes the administration of vasomotor drugs combined with Phenobarbitone (Luminal). Theominal might be employed.

HYPOTENSION

This condition may occur in apparently healthy persons (3%) or may be associated with general disorders such as shock, anæmia, acute infectious diseases, Addison's disease, endocrine disorders, etc.

Posture is always an important factor in the occurrence and treatment of symptoms actually due to hypotension and sleeping regularly on a bed elevated 18" at the head is said to be of value.

Vaso vagal attacks fainting or collapse may be treated by injection of Adrenalin (1 in 1000) 4 minims and their tendency combatted by Epedrine $\frac{1}{2}$ grain t.i.d. by mouth. A firm lower abdominal support such as a Curtis belt may be of use.

HYSTERIA (see also page 310)

Hysteria may have so many manifestations and underlying causes that its treatment cannot fully be considered here.

During a hysterical fit sympathetic friends should be removed from the room. the patient's movements should be unrestrained provided there is no risk of her hurting herself an act on which is unlikely to be intentional. Splashing cold water on the face and ordering in the hearing of the patient that this is to be repeated every 2 minutes until the attack ceases is often effective. Pressure on the supra orbital nerve is sometimes useful.

In general it is essential for the medical attendant or nurse to gain the confidence of the patient and at the same time to avoid sympathizing with her infirmities. It is wrong to give her the impression that she is thought to be malingering. Firmness and tact without harshness or unkindness must be employed. Foolish displays of emotion require reproof while any improvement should be followed up by encouragement. As a rule local manifestations should be treated with wise neglect. Fresh air nourishing food and absence from worry are necessary and severe cases should be removed from home surroundings. A Weir Mitchell regime may be beneficial. In addition suggeston, electricity and massage are valuable.

Drugs Morphia must always be avoided. Hypnotics may sometimes be necessary but cachets containing sugar are often equally effective.

Either of the following mixtures may be given Bromide being especially useful

- | | | | |
|---|--------------------------|---------|----------|
| 1 | R Tinct Valerian. Ammon. | m | 30 |
| | Tinct Asafoetida | m | 20 |
| | Aq Camphoræ | ad 1 oz | t.d.s. |
| 2 | R Potass Bromid. | gr | 10 to 20 |
| | Ammon. Carb | gr | 3 |
| | Tinct Valerian. Ammon | m | 30 |
| | Aq ad 1 oz | t.d.s. | |

ICHTHYOSIS

A daily hot bath should be taken Subsequently the skin should be rubbed well with an animal fat such as Lanoline Some cases are better suited by Vaseline or a vegetable oil e.g. Olive Oil The following ointment may be useful

R Resorcin	dr	1
Ol. Amygdalæ	oz.	1
Lanolin	oz	3
Misce ft. Ungt		

Small doses of Thyroid by mouth are also advantageous

IMPETIGO

If individual lesions are prevented from spreading by covering with Elastoplast the condition tends to heal spontaneously in about ten days

1 The speediest method of treatment at the present time is the application after the removal of crusts of —

- (a) 5 to 10% Sulphathiazole or Sulphadiazine in soft paraffin or 5% in Lassar's Paste

(b) A Sulphathiazole powder dusted thickly over the lesions without removal of crusts

Sulphathiazole	10 powdered tablets (5 grams)
Zinc Oxide	$\frac{1}{2}$ oz Starch powder $\frac{1}{2}$ oz

2 Another useful method is to paint the lesions with —
 2% aqueous solution of Gentian Violet or
 2% Malachite Green in 80% alcohol (to which an equal part of 2% Mercuric Chloride in 80% Alcohol may be added if desired)

3 The older method of treatment with mercurial ointments (e.g. Ungt Hydrarg Ammon Dil) is much slower and less certain than the above and has been generally discarded

Crusts may be removed (a) with soap and hot water then swab with a weak solution of Hydrogen Peroxide (5 vols) (b) by application of starch poultices or Olive Oil soaks until the crusts are softened especially when the scalp is extensively involved In such cases it may be necessary to cut the hair or shave the scalp Associated pediculosis requires treatment Scratching should be prevented Lint gloves may be used to cover the hands and in some instances splinting of the arms will be necessary

4 The general health should receive attention for affected children are generally debilitated Good food and plenty of fresh air are essential Cod liver Oil or a mixed vitamin preparation should be given Applications of ultra violet light are useful

INFLUENZA

1 The patient should be confined to bed in a warm well ventilated room. The temperature should be maintained at about 60° F but the importance of having the windows well open cannot be over emphasized. The bed-clothes should be light and consist of sheets and blankets only Tepid sponging may be carried out at intervals if the body temperature is high

2 During the acute stages a fluid diet should be given. At least 4 to 6 pints of fluid should be taken during 24 hours. Lemonade with plenty of Glucose, Imperial Drink or plain cold water should be included.

3 An attempt should be made to get the bowels to act as soon as possible and, for this purpose, Calomel, $\frac{1}{2}$ to $\frac{1}{4}$ grain, every hour until the bowels are open, followed by a saline or some other suitable aperient may be given. An enema may be required and is sometimes followed by relief of symptoms.

4 There is no other specific drug treatment, but any of the following may be found useful.

(a) Tinct. Quininae Ammoniatæ, dr 1, every 4 hours

(b) Aspirin and Dover's Powder, of each 5 to 10 grains, every 4 hours

(c) R. Quininae Salicyl	gr 5
Ol Cinnamomi	m 2
Pulv. Acaciae	
Pulv. Tragacanth Co	} aa gr 5
Aq ad 1 oz, every 4 hours	

5 For headache, Aspirin, Phenacetin and Caffein, alone or combined, or Vegamin are useful.

6 If respiratory symptoms are marked the medicinal treatment must be modified. The mixtures given in acute bronchitis (p 47), or the following are suitable.

R. Ammon Chlor	gr 5
Tinct. Ipecac.	m 5
Tinct. Scilla	m 5
Tinct. Opi Camph	m 10
Syrup. Prun. Scrot	m 20
Aq ad 1 oz, every 4 to 6 hours	

Inhalations, a liniment applied to the chest and a linctus, especially Codeme, may all be useful (see page 51).

7 Insomnia is an important consideration. Chloral and Bromide should be tried in the first place. Paraldehyde, dr 1 to 2, in an ounce of whisky may be effective if a more powerful drug is required. Dover's Powder, 15 grains, is useful. In the early stages Morphine, $\frac{1}{2}$ grain, combined with Atropine, $\frac{1}{16}$ grain, may occasionally be employed.

if there is no pulmonary congestion Barbiturates are not generally recommended but small doses of drugs such as Soluble Barbitone (Medinal) or Allonal are safe

8 For gastro intestinal symptoms see vomiting page 339 and diarrhoea page 90

In severe cases Saline with 5% Glucose may be given rectally or even intravenously Opium in some form is often useful and Morphia injections may be required if the drug is not tolerated by mouth

9 Cardiac weakness may be treated with injections of Nikethamide (Coramine) Leptazol (Cardiazol) or Strychnine Alcohol may be beneficial in the later stages especially in elderly subjects

10 There is no clear evidence for the administration of Sulphonamide drugs in straight forward cases Where however secondary organisms are involved such as in influenzal broncho pneumonia Sulphapyridine should be given (e.g. 8 grams during the first 24 hours) It should not be continued after the second day if there is no improvement

11 Convalescence The patient should remain in bed until the temperature has been normal for at least 4 or 5 days If any complications have occurred a longer period will be necessary A liberal diet should be allowed and a simple tonic should be given A few days change in the country or at the seaside may be beneficial but if depression is a marked feature of the case a cheerful and reliable companion should be present The risk of suicide in some of these cases should be remembered

12 Prophylaxis Cases should be isolated as far as possible especially in the acute stages In epidemics those suffering from pneumonia should be separated from the convalescents Prophylactic vaccines may be tried

INSECT-BITES

1 Relief can usually be obtained by the application of a suitable alkali e.g. weak ammonia washing soda sal volatile soap or the domestic blue bag

2 Wasp and bee stings should be removed, preferably by gentle scraping with a knife edge. The application of forceps will squeeze the poison bag if it is attached and inject more toxic material. Hydrogen Peroxide or washing blue may then be applied.

3 Harvest bugs should be removed and the part dabbed with Benzol, Petrol or Ether. After washing with soap and water, Carbolic lotion, 1 in 40, may be applied.

4 When local inflammation occurs it should be treated on general lines. The part should be rested, by splinting or a sling if necessary, and fomentations, Antiphlogistine or infra red rays applied. Cellulitis may require incision.

Prevention

Dusting the legs with Sublimed Sulphur or applying Ungt Sulphuris protects against the harvest bug. Those especially susceptible to flea bites may wear a small muslin bag containing Camphor or Potass Sulphurata. Other insects such as mosquitoes are kept away by Oil of Citronella or Sassafras, which may be smeared over exposed parts. Other essential oils such as Cinnamon, Cloves and Eucalyptus may be tried. The following is a useful prescription.

R. Ol. Cedri	dr 1½
Ol Citronellæ	dr 3
Spt Camphoræ	ad 1 oz

Methyl Salicylate Liniment is also useful for this purpose.

INSOMNIA

The inability to secure sufficient sleep, or failure to obtain sound restful sleep, is a problem which frequently presents itself for treatment and which may severely test the ingenuity of the doctor, for it is not solved by simply prescribing one of the many available hypnotic drugs.

The first step is to ascertain, if possible, the underlying cause. The simplest method of grouping cases is

1 Primary—where no physical cause can be found, e.g. anxiety states, neurasthenia, hysteria.

2 Secondary—where pain, physical discomfort such as dyspepsia—pruritus—frequency of micturition—cough—dyspnoea, play a part. also toxic states, organic cerebral disease and cerebral arteriosclerosis

In the second group, curative or symptomatic treatment should be applied for the underlying cause and its symptoms before, or at the same time as, active measures are adopted to procure sleep

General Management

A careful history of the patient's habits must be obtained so that any undesirable factors or contributory causes may be eliminated

1 He should sleep in a quiet room, adequately ventilated but kept at an even temperature. The blinds should be drawn, doors and windows wedged to prevent rattling and clocks removed. (Occasionally the monotonous ticking of a clock is an aid to drowsiness.)

2 The bed clothes should be light but warm. As a rule, a spring mattress is best, but it is not always wise to change the type of bed to which the patient is accustomed.

3 A warm bath on retiring promotes sleep in some individuals. A hot water bottle or bed socks are often of value, especially if coldness of the extremities is noticed.

4 Overloading the stomach shortly before bed time is undesirable and a light evening meal is often preferable to a heavy dinner. In such circumstances, soup, Bovril, hot milk or a preparation such as Ovaltine taken just before retiring, or during the night if the patient wakes, provided it is kept hot in a Thermos flask and the patient does not have to rouse himself to prepare it.

5 Tea and coffee at night should be avoided. The effect of alcohol is variable. In some patients, whisky or brandy in hot or cold water is of great value as a night-cap while in others it produces wakefulness. Before prescribing it the possibility of producing an alcohol habit must be considered, especially if the patient is of an unbalanced psychological order.

6 Patients who complain of wakefulness on account of

excessive mental activity on retiring, should pass their evenings quietly and games such as competitive cards should be avoided. Quiet reading of unsensational literature may be recommended, while the effect of a walk before bed time may be tried.

7 Many people sleep best on their right side, some prefer one pillow, others like a number, and a few imagine they sleep best with their beds in some definite position, e.g. placed north and south.

8 The patient often fears the consequences of insomnia more than the lack of sleep—a dread which in itself may produce an anxiety state. Reassurance is therefore, of great importance. He should be told that life will not be lost on this account nor will he lose his reason.

9 In cases of anxiety state, due either to conscious or sub-conscious mental conflict, which may arise in the course of various psychoneurotic disorders, psychotherapy may be valuable. Often simple discussion of the underlying factors and offering some solution to the problems present may have the desired effect.

It is clearly wrong to attempt to force the patient to sleep with potent drugs without first attempting to remove the underlying cause. Drugs may be essential in cases of this type in order to obtain the tranquillity of mind necessary for psychotherapy to be effective. They are also valuable in breaking the "habit of insomnia" which is prone to exist in this type of case.

The fact of taking a drug is a powerful suggestive force which will aid in procuring sleep and, in the first instance, the preparation employed should be strong enough to produce the desired effect. The dose and potency should subsequently be reduced without the knowledge of the patient.

Drugs

When the above problems are being or have been settled, resort to hypnotic drugs may be necessary, but they should be regarded as secondary measures, the primary measure in the treatment of insomnia being removal of the cause.

An enormous number of official and unofficial drugs are available. Those containing Pyramidon (Amidopyrin) should only be employed if the practitioner is aware of the danger of idiosyncrasy with the production of agranulocytosis which may prove fatal even after a few doses. The wisest course is to use a suitable substitute and drugs containing this substance have been excluded from the present account.

Morphia and Opium preparations should only be prescribed for the relief of pain when other preparations are or are likely to be unsuccessful in their results or the physical cause of pain is likely to be of short duration. Dover's Powder 10 to 15 grains alone or combined with Aspirin is very useful in acute febrile conditions.

There are few hypnotic drugs which, at some time or another have not been credited with habit-forming properties. For this reason, if it is likely that their administration will be prolonged, the drug selected should be varied from time to time. Draughts and cachets are useful in this connection because their contents can be varied without the knowledge of the patient. Many of the proprietary tablets are too easily obtained by him.

On the other hand, the patient himself may fear the use of drugs and decline to take them when their judicious prescription would prevent the development of an insomnia obsession. This apprehension of drugs may in itself produce an anxiety state.

The combination of two drugs may in some instances have a greater effect than a larger dose of one of them alone.

GROUP I Potassium Bromide may be given alone in doses of 20 to 30 grains and, in mild cases may be sufficient. It is unlikely to be effective in cases of acute mental disorder and should be used with caution in old age when it is liable to cause mental confusion.

Aspirin, 10 to 15 grains or Phenacetin 5 to 15 grains by diminishing pain or discomfort are useful and may be employed to reduce the dose of a more depressing drug e.g.

{ Soluble Barbitone (Medinal)	gr 5 to 7½
{ Aspirin	gr 10 to 15

Paraldehyde, dr $\frac{1}{2}$ to 2, though the most unpleasant, is one of the safest hypnotics but is contra indicated in gastric disorders. The duration of its action is relatively short hence it is more valuable when speedy induction rather than prolonged sleep is required.

R Paraldehydi	dr 2
Syr Aurant	dr 3
Aq Cinnamomi	ad 1 oz

If more than one dose is prescribed, the bottle must be well shaken because only a small amount of the Paraldehyde (1 in 9) goes into solution, the remainder floats on the top of the mixture.

GROUP II (a) Chloral Hydrate, 5 to 20 grains, is a safe hypnotic but should be used with care when depression of the cardiac functions is to be feared. Serious effects on the heart are however, rarely seen. Syrup of Chloral is a useful preparation and contains 10.9 grains of Chloral Hydrate in each drachm.

(b) Chloral Formamide (Chloralamide), 15 to 45 grains, is less certain in its action and its hypnotic effect tends to diminish on repeated administration, but is said to depress the heart less than Chloral. Both are incompatible with alkalis but may be conveniently combined with Bromide and in exceptional cases with Opium. (E.g. Liq. Opi. Sed., 15 minims, may be added to the following mixture.)

R Potassu Bromidi	gr 15 to 20
Chloral Hydratis	gr 15 to 30
Syrup Aurant	dr 1
Aq	ad 1 oz

GROUP III The Urea Group

The drugs of this group are mild and safe hypnotics, e.g.

Urethane	gr 15 to 30
Adalin	gr 5 to 15
Bromural	gr 5 to 10

and may often advantageously be combined with Aspirin

GROUP IV. The Sulphone Group

The most important member of this group is Sulphonal, 10 to 30 grains. It has the disadvantage of being slowly absorbed and must therefore be given about $1\frac{1}{2}$ hours before bed time. Its excretion is also slow so that its action may be prolonged into the next day and a cumulative effect may be produced. Skin eruptions are occasionally seen. It should not, as a rule, be used for longer than a week at a time. Trional, 10 to 20 grains, is more rapid in its action and less cumulative. The drugs of the following group are generally more useful.

GROUP V The Barbiturates

Although much has been written of the dangers of these drugs, they must be very uncommon if their use is tempered with discretion. Idiosyncrasy may occasionally occur, as with almost any other drug but should be readily noticed by a careful observer. If one fails to employ drugs of this group one is not infrequently faced with the problem of a patient becoming desperate from lack of sleep and if there be any evil in the barbiturates, it is the lesser one.

Veronal (Barbitone), 5 to 10 grains,

Medinal (Soluble Barbitone) 5 to 10 grains is one of the most useful drugs of the group and may be combined with Aspirin for the relief of pain.

Luminal (Phenobarbitone) A single dose of 1 to $1\frac{1}{2}$ grains should rarely be exceeded, and is useful in mild cases.

Soneryl and Dial are useful proprietary preparations of this group.

Evipan. This appears to act and to be excreted rapidly. It is therefore of value when the patient has difficulty in getting to sleep but once he has succeeded sleeps soundly. The rapid excretion abolishes the "hang over" which may be experienced with other more powerful members of the group.

Somnifaine and Quadronox are powerful barbiturates.

Nembutal, $1\frac{1}{2}$ to 3 grams, is rapid in action and powerful in its effects.

Barbiturates should be used with special caution in

1 Allergic patients (Asthma, angio neurotic cedema)

2 Defective renal or hepatic function

3 Diabetics

4 Thyrotoxicosis

5 Old age

The tendency to habit formation may be greatly diminished by withholding from the patient the knowledge of the name and dose of the drug he is taking and insisting that it is only given under continuous medical supervision

JAUNDICE

Jaundice is a symptom rather than a disease and therefore every effort should be made to arrive at a correct diagnosis in each case. An X ray of the biliary tract, cholecystogram, ven den Bergh's test chemical examination of the stools, Wassermann reaction, or lœvulose tolerance test may be necessary, in addition to the ordinary routine examination

In all cases the amount of fat in the diet should be reduced and an adequate amount of Glucose given. Calomel, $\frac{1}{2}$ grain, t d s, is useful and a morning saline should be given. Calcium Gluconate or Lœvulinate by intravenous or intramuscular injection is advisable in most severe cases and may be given daily or several times a week

Intense itching may be relieved by an alkaline bath (2 lbs of Bicarbonate of Soda) applications of 1 in 40 Carbolic lotion, 1 in 70 Menthol in spirit, or injections of Pilocarpine, $\frac{1}{2}$ grain, daily or on alternate days may be tried. Hypnotics may be required at night, but it must be remembered that the detoxicating power of the liver may be impaired so that caution in their use is advisable

Offensiveness of the stools may be diminished by giving Salol, e g

R Salol	gr 7
Mucilag Tragacanth.	dr 1
Aq Menth. Pip	ad 1 oz t d s

In syphilitic cases, arsenical preparations should be avoided on account of the hepatic deficiency present

3 A suitable abdominal belt put on before the patient rises in the morning and removed at night. It is generally considered advisable to fit a special kidney pad to such a belt.

Surgical measures are contra indicated in the presence of neurasthenia.

LARYNGITIS, ACUTE

This may occur as part of an acute infection of the upper respiratory tract as a result of straining the voice or following excess of tobacco or alcohol.

Mild cases often require little active treatment and simple measures such as resting the voice and avoiding tobacco and alcohol are effective. More severe cases especially those associated with an acute infection should be confined to bed in a warm room the temperature of which is maintained at an even level. Resting the voice is essential and the patient should be instructed to avoid phonation by whispering. Calomel 3 grains or some other laxative should be administered.

One of the following diaphoretic mixtures may be given

- | | | |
|---|-------------------------------|-------|
| 1 | R Sodii Bicarb | gr 10 |
| | Liq Ammon Acetat Dil | dr 4 |
| | Spt Ætheris Nitrosi | m 10 |
| | Aq ad 1 oz every 3 or 4 hours | |
| 2 | R Liq Ammon Acetat Dil | dr 2 |
| | Oxymel Scillæ | m 20 |
| | Tinct Ipecac | m 5 |
| | Spt Ætheris Nit | m 20 |
| | Aq ad 1 oz every 4 hours | |

Aspirin 10 grains may be given if desired.

External applications e.g. cold compresses Antiphlogistine are useful especially for pain.

(N.B.—Cold is often more effective than heat.)

Steam inhalations probably give more relief than anything else. Friar's Balsam (Tinct Benzoin Co.) dr 1 may be added to 1 pint of water at 140° F. Hot inhalations should not be used if the patient is going out of doors but should be replaced by a spray e.g. 5% Menthol in Liquid Paraffin or the following

R. Menthol	gr	7
Camphor	gr	3
Chloretone	gr	5
Paraffin. Liq	oz	1

For the relief of cough, a linctus should be given e g Linct Camph Co, dr 1, or Linct Diamorphinæ (Heroin) B P C dr 1 Alternatively, lozenges e g Troch Krameris et Cocainæ, may be used

When the temperature has settled and diaphoresis is no longer indicated the following expectorant is useful

R. Ammon Carb	gr	5
Tinct Ipecac	m	10
Tinct Scillæ	m	10
Syrup Tola	m	30
Infus Senegæ	ad 1 oz	t.d.s.

Acute laryngitis in children calls for prompt treatment In the first place the physician must be absolutely satisfied that the condition is not laryngeal diphtheria If any doubt exists it is wiser to administer 16 000 to 24 000 units of antitoxin than to wait until laryngeal obstruction calls for a tracheotomy

A child should always be confined to bed If attacks of dyspnoea occur they may be relieved by putting it in a hot bath and applying cold water compresses to the throat or an emetic dose of Tinct Ipecac (e g 1 dr followed by $\frac{1}{2}$ dr every half hour until vomiting occurs) may be effective

An aperient should be given, e g Calomel, $\frac{1}{4}$ to 1 grain every 2 to 3 hours until the bowels are open Hot fomentations may be applied to the neck and the atmosphere moistened by a steam kettle

LARYNGITIS, CHRONIC SIMPLE

Before this diagnosis is made utmost care must be taken to exclude new growth, tuberculosis and syphilis or the presence of laryngeal paralysis

Treatment in the first place must be directed towards relieving any strain on the voice especially in those who

use it professionally. This not only means rest but also investigation of the voice production, a matter which may need the help of an elocutionist. Excess of alcohol, tobacco or a dust-laden atmosphere should be avoided.

Inhalations are useful, e.g. Friar's Balsam, Oil of Pine, but the patient should remain indoors for a period after their use. The Menthol, Chlorotone and Camphor spray used for acute laryngitis is also useful.

Potassium Iodide in small doses, i.e. 3 to 5 grains t.d.s., may be given by mouth.

In obstinate cases, local applications to the larynx two or three times a week may be tried, e.g. Zinc Chloride, 20 grains to 1 oz. of water.

For those who can afford it, spa treatment may be of value. In England, Harrogate is sometimes recommended.

LARYNGITIS, TUBERCULOUS

The actual treatment of this condition requires special consideration which cannot be given here.

In any case, resting the voice is necessary either by whispering or, in severe instances, absolute silence, the patient being supplied with a writing pad or slate.

Cough should be restrained as far as possible, except for the purpose of expelling secretion. Much can be done by voluntary effort, which may be aided by Linct. Campb. Co., Linct. Codem., or Linct. Diamorphinæ. If the secretion is very tenacious the following may be given.

R. Ammon. Carb.	gr 5
Pot. Iod.	gr 5
Spt. Chloroformi	m 3
Infus. Senegæ	ad 1 oz t.d.s.

Pain may be relieved by lozenges of Menthol and Cocaine or Morphine and Ipecacuanha (B.P.). If severe and associated with dysphagia, laryngeal inhalations of Orthoform or equal parts of Orthoform and Anæsthesin by means of Leduc's tube should be given 10 minutes before meals. About 40 grams of powder should be used. As a rule, soft

semi solid foods are taken better than plain liquids. Swallowing is sometimes made easier if the patient lies prone with the head projecting over a couch and sucks up thickened fluids with a glass tube. In very advanced cases sprays of Cocaine or one of its substitutes combined with injections of Morphia or Diamorphine (Heroin) may be necessary.

Other methods include Anaesthone tablets (P. D. & Co.) Troch. Kammeræ et Cocamæ (B. P.) and ionization with Potassium Iodide.¹

Operative treatment for the relief of pain includes cauterization section of the superior laryngeal nerve or its injection with Alcohol. The latter is a relatively simple and satisfactory procedure.

LEUKÆMIA

Leukæmia may be myeloid, lymphatic or aleukæmic in type and acute or chronic in character. Some cases combine the features of more than one type.

Acute leukæmia is rapidly fatal and no treatment is known which will influence its course.

Chronic myeloid leukæmia is best treated by X ray therapy to the spleen and if necessary to the long bones. Arsenic should be given by mouth (Liq. Arsenicalis e.g. 5 minims increased to 15 minims t.d.s.) or intravenously (N.A.B.) increasing until full doses are being taken. A careful watch should be kept for toxic symptoms. Iron should be given in full doses if anæmia be present.

Benzol has been recommended in order to reduce the number of white cells but is dangerous in its effects and may produce an aleukæmic state. It is given in capsules with Olive Oil commencing with 10 minims twice a day and increased gradually up to 25 minims three times a day. The administration must be carefully controlled by white cell counts. It should only be used when a full course of X ray therapy has failed to produce improvement.

¹ *Lancet*, 1938 ii, 1109

Chronic lymphatic leukæmia should be treated by applications of X rays to the lymphatic swellings. The spleen is rarely grossly enlarged and should not be irradiated. Splenectomy is contra indicated in leukæmia.

LICHEN PLANUS

In the acute stages rest in bed may be necessary

Local Applications

1 Calamine Lotion

2	R	Liq. Picis Carb.	dr	4
		Liq. Plumbi Subacetatis Fort.	dr	2
		Aqua Destillata	ad	20 oz
		Misce ft. lotio		

3		Crude Coal Tar	1 part
		Benzole	2 parts
		Acetone	8 parts

Made as a paint

4 Lassar's Paste

For more chronic cases the following ointment is useful

	R	Acid. Carbolici (Phenol)	gr	20
		Hydrarg. Perchlor.	gr	5
		Ungt. Zinci	oz	3

A Salicylic Acid plaster may be used for hypertrophic patches, and applications of X rays are also of value.

For internal administration

1 During the acute stages

	R	Liq. Hydrarg. Perchlor.	dr	1
		Aq. Chloroformi	ad	1 oz t.d.s.

2 Later

	R	Vinum Antimoniale	m	4, t.d.s.
		or		
	R	Liquor Arsenicalis	m	5 t.d.s.

One of these may be tried for several weeks and if there is no improvement the other may be substituted.

Hypnotics may be required at night.

LIVER, ACUTE YELLOW ATROPHY OF

The treatment of this condition is not very satisfactory. The patient must be confined to bed and a diet consisting of milk and carbohydrate food given. Large quantities of fluid should be taken and, if vomiting is marked, rectal salines will be required. Injections of Insulin together with Glucose by mouth or intravenously may be tried. Calcium Gluconate or Lævulnate should be given by intramuscular or intravenous injection.

Sodium Bicarbonate should be given by mouth.

In cases following arsenic therapy, intravenous injections of Sodium Thiosulphate may be tried (5 to 10 c.c. of a 10% solution).

LIVER, CIRRHOSIS OF (multilobular)

Early Stages

Alcohol in all forms must be entirely forbidden together with highly seasoned food, condiments including mustard, pepper, vinegar, pickles and curries. The diet should contain plenty of milk, milk puddings, bread and butter, vegetables and fresh fruit. Fish may generally be permitted. (E.g. Carbohydrate 400 grams, Protein 100 grams and Fat 50 grams.) Full doses of vitamins may be given, especially Nicotinic acid, Ascorbic acid and Vitamin D. The main treatment is directed towards the associated chronic gastritis. Gastric lavage with saline or water to which Hydrogen Peroxide (10 vols.), dr. 1 to 1 pint, has been added, is useful. Acid Hydrochlor. Dil., dr. $\frac{1}{2}$ to 1 in 5 oz. water may be taken with meals.

The bowels should be kept well open with effervescent salines, taken in the morning. A Rhubarb or Blue pill may be given at night as required. Potassium Iodide may be tried.

R. Potassii Iodidi	gr 10
Sodii Sulph.	gr 30
Aq. Cinnamon	ad 1 oz. t.d.s.

The following mixture may be given between courses of Potassium Iodide.

R. Ammon. Chlor	gr 10
Bismuth Subeyl	gr 20
Sodu Sulph	gr 30
Pulv Tragacanth Co	q s
Aq Chloroformi	ad 1 oz t d s

The Wassermann reaction should always be tested and in syphilitic cases injections of Bismuth or Mercurial inunctions should be given (arsenical preparations must never be used) In suitable cases spa treatment may be considered e.g. Harrogate

More Advanced Stages

The diet should be as light as possible and have a milk basis

If ascites be present paracentesis should not be delayed and may be repeated as often as necessary Its repetition may be delayed by the use of Mersalyl In selected cases the Talma Morrison operation of omentopexy may be considered but is tending to fall into disuse

Other complications such as hæmatemesis and jaundice must be treated on general lines

In the *latest stages* when cholæmia is present rectal subcutaneous or intravenous salines may be employed Sodium Bicarbonate and Glucose may be given by mouth if acetone is present in the urine and intravenous injections of Calcium Gluconate or Lævulinate (10 to 20 c.c. of 10% solution warmed to body temperature) may be tried (2 c.c. of a 15% solution of the latter may be given intramuscularly if preferred) There is however little hope of saving the patient

LUNG ABSCESS

The treatment of lung abscess requires consideration of the cause and type of the condition

1 Due to foreign bodies in the bronchi or aspiration of septic material the latter often being post-operative (e.g. tonsillectomy)

2 Following infective processes e.g. *Pneumonia*

3 Embolic Such abscesses may be multiple in which case surgical treatment is not indicated they are often fatal

4 Associated with bronchiectasis or carcinoma of the lung

The abscess may be acute or chronic in type when presenting itself for treatment

Acute Stages

Careful medical treatment with the patient at rest in bed should be carried out for at least 6 weeks before operative interference is contemplated

1 Postural drainage The actual position assumed to some extent depends on the position of the abscess Except for upper lobe lesions, the patient should remain on the sound side for 5 minutes and then lie across the bed with the head nearly touching the floor This position may only be tolerated for a few minutes at first but the time should be gradually increased and the exercise carried out at least four times a day A special bed (Nelson type) is often advantageous

2 Good results have been reported with Sulphapyridine, and this should probably be tried before other remedies

3 Potassium Iodide and Ammonium Chloride given by mouth tend to lower the viscosity of the sputum.

4 One of the Arsphenamine preparations should be given in full doses in view of the spirochaetal infection so commonly present, e.g. N.A.B., 0.6 gram increasing to 0.9 gram every third day until a total of 4 to 6 grams has been given

5 Emetine Hydrochloride is sometimes of value and may be given by injection (1 gram daily for twelve doses)

6 Repeated blood transfusions are of value in improving the general health both in acute and chronic stages

When an abscess has ruptured into the bronchus the next stage to be considered in the management of the case is *bronchoscopy* This may be carried out for three purposes

(a) Diagnostic including the removal of a foreign body, the introduction of Lipiodol into the abscess cavity, a procedure necessary to obtain accurate localization of the lesion if subsequent surgical treatment is to be carried out

- (b) *Canterization of the granulation tissue at the bronchial orifice, thereby permitting freer evacuation of the contents of the cavity when postural drainage is resumed*
- (c) *Aspiration and irrigation of the cavity with a solution of Iodine, Acriflavine or 10% Gomenol*
Many abscesses clear up completely with repeated bronchoscopic aspiration which should therefore be commenced not later than 3 weeks after the onset in the average case but except in hilar abscess, if improvement is not considerable, surgical measures should be adopted after 8 weeks of this regime

Chronic Stage

In the majority of cases surgical treatment is indicated, the operation performed depending on the individual features presented

1 Surgical drainage of the abscess by a one- or two stage operation, depending on whether or not pleural adhesions are present or not

2 Phrenic avulsion may be occasionally indicated if the abscess is basal in position

3 Artificial pneumothorax is rarely advisable and is attended by grave danger of producing pyo pneumothorax from rupture of pleural adhesions, especially if the abscess is situated in the periphery of the lung. Some cases of hilar abscess may, however, be treated satisfactorily by this means

4 Very chronic cases may require thoracoplasty or, occasionally, lobectomy may be considered advisable

In any case, surgical treatment should not be delayed until the wall of the abscess is hard and fibrous, a suitable period for operation often being about 2 months after the onset of the condition

LUNG, PRIMARY CANCER OF

The main hope of successful treatment lies in early diagnosis, which can only be obtained if careful search is made for the cause of unexplained cough, hæmoptysis,

dyspnoea or pleuritic pain. For this purpose in addition to the clinical findings, X ray supplemented in some instances by Lipiodol injection, and bronchoscopy are necessary.

1 Lobectomy or pneumonectomy can be carried out successfully in some early cases.

2 Deep X ray therapy or the insertion of Radon seeds directly into the growth are sometimes feasible but too much must not be expected from this form of treatment.

3 In the majority of cases palliative measures are all that can be adopted.

(a) For cough. A suitable linctus, e.g. Linct. Camph. Co., Linct. Codein., Linct. Diamorphinæ (page 51).

(b) For pain. Analgesics including Aspirin, Veganin, Allonal and Veramon. If pain is not relieved by these means, Tincture of Opium, Nepenthe, Morphia, or Dilaudid or Diamorphine should be given.

Pain due to involvement of one or more intercostal nerves may be relieved by injecting the nerves close to the angles of the ribs with Procaine Hydrochloride (Novocain), Proctocain, or 1 to 2 c.c. of Alcohol. The last two substances if accurately injected will have a prolonged action.

(c) In some instances the air replacement of a pleural effusion may make the patient more comfortable.

(d) Cocaine, $\frac{1}{4}$ grain, by mouth or injection may produce desirable euphoria.

LYMPHOGRANULOMA INGUINALE

This is a relatively rare condition in this country, but cases appear to be recognised more frequently than formerly. In addition to clinical grounds, the diagnosis may be confirmed by Frei's test. It is worth remembering that this condition may be a cause of non-malignant stricture of the rectum. Treatment with Frei's Antigen and Stibophen (Fouadin) have been tried, but the combination of the latter drug with Sulphisulamide appears to be most successful. Other organic Antimony compounds (e.g. Anthiomaline) have also been used.

MALARIA

During the Attack

1 The patient should remain in bed between blankets. Ample fluids and a light diet such as milk, eggs, soups and farinaceous foods should be given. A dose of Calomel followed by a saline is advisable.

2 During the cold stage, heat must be applied in the form of hot blankets and hot water bottles.

3 During the sweating stage, the sweat may be removed by bathing with warm water, but care must be taken to keep the patient sufficiently warm and to avoid chills.

4 For collapse, brandy, hot coffee, diffusible stimulants or injections of Strychnine, Nikethamide, etc., may be required.

5 For hyperpyrexia, cold sponging baths or an ice pack may be used.

6 Sedatives may be necessary for restlessness.

The diagnosis of the condition should be confirmed in all cases by examination of the blood for the presence of the parasite.

Quinine is the specific drug used in the treatment of malaria. Uncoated tablets should be used, for those which are coated may not be absorbed. Either the Dihydrochloride or Bisulphate should be employed.

For routine treatment 10 grams of Quinine should be given three times a day after food for the first week or fortnight. For the next month, 5 grams three times a day. For the next 4 to 6 weeks 5 grams twice daily. The full course of treatment should, therefore, extend over a period of approximately 3 months.

Another scheme of treatment is 30 grams a day for four days, followed by 20 grams a day two days a week (e.g. Saturday and Sunday) for eight weeks.

In some cases which are resistant to or especially tolerant of Quinine larger doses may be given.

If Quinine is vomited, 10 grams of Dihydrochloride dissolved in 10 c.c. of water may be given with the strictest aseptic precautions deeply into the upper and outer

quadrant of the gluteus maximus muscle on three or four successive days

Euquinine dose $1\frac{1}{2}$ to 15 grains which is almost tasteless may be tried in cases of intolerance

In cerebral malaria with coma and in very severe cases 10 grains of Quinine Dihydrochloride dissolved in 10 to 15 cc of water should be given intravenously without delay This may be combined with lumbar puncture Intravenous Quinine is sometimes followed by collapse which should be combated with injections of Adrenalin (1 in 1000) 1 cc

Other drugs which are employed include

1 Pamaquin (Plasmoquine) which destroys especially the sexual forms of malignant tertian but is also useful in quartan and in relapsing benign tertian types Dose—0.01 gram four times a day in tablet form

2 Mepacrine Hydrochloride (Atebrin) dose—0.1 gram three times a day after meals for 7 to 10 days A further course may be given after a week's rest It is said to be especially useful in cases of blackwater fever and in pregnancy It may be given by intramuscular injection in serious cases and in cerebral malaria

Iron should be given during convalescence

MEASLES (Morbilli)

Incubation period = 14 days

Infectious period = 14 days after the appearance of the rash provided there are no complications

Quarantine period = 16 days

GENERAL MANAGEMENT

The child should be confined to bed in a warm (60 to 65° F) airy room and placed on a fluid diet while pyrexia lasts Bright light is best excluded by a screen since drawing blinds usually means exclusion of air Cough and laryngitis in the early stages are relieved by a steam tent or bronchitis kettle Tinct Benzoin Co may be added to the boiling water Fomentations may be applied to the

larynx and either of the following mixtures given every 4 hours (child of 5)

R. Sod i B carb	gr 5
Tinct Ipecac	m 5
Tinct Op i Camph	m 5
Syr Tolu.	m. 10

Aq ad $\frac{1}{2}$ oz

or R. Oxy mel. Scillæ	m 15
Spt Æth Nit	m 10
Liq Ammon. Acetat	m 30
Glycerini	m 30

Aq ad $\frac{1}{2}$ oz

Since the danger of measles lies in its complications which are due to secondary organisms appropriate doses of Sulphapyridine (page 350) might be given prophylactically for three or four days as soon as the diagnosis is made in selected cases

Laryngitis occurring later in the disease or appearing for the first time when the rash is well established is suggestive of diphtheria especially when the latter is prevalent and the prompt injection of 16 000 units of antitoxin without waiting for the result of a swab may be life saving

Some stomatitis is usually present and the mouth must be cleaned after each feed using Glycerin of Borax Potassium Chlorate lotion or dilute Tincture of Myrrh

Sore eyes should be bathed frequently with Boric lotion and adhesion of the lids prevented by applications of Vaseline or Ungt Hyd Ox Flav (half strength) In more severe cases 2% Protargol or Silver Nitrate (1 grain to the ounce) drops twice daily For corneal ulceration use Atropine drops ($\frac{1}{4}$ to $\frac{1}{2}$ %)

Broncho pneumonia and other complications must be treated on general lines

In the absence of complications the child may get up after a week of normal temperature provided the bronchitis has subsided but special care must be taken to prevent catching cold

During convalescence Iron and Cod liver Oil are indicated and the diet may be supplemented by cream and

Virol. Full doses of mixed vitamin preparations (A and D), e.g. Liq. Vitamin, A et D Conc., Adexolin, Radiostoleum, have been recommended for the acute stages.

PROPHYLAXIS

Sero-prevention. The immunity thus acquired only lasts 3 to 4 weeks and this method should, therefore, only be used when special circumstances demand it, viz. in very young infants and weakly children or those suffering from intercurrent disease.

Sero-modification. This is desirable in all other cases because an attack of modified measles confers permanent immunity.

Toxic hepatitis with Jaundice, occurring up to 12 weeks after the injection of serum has been recorded.

If serum is not available, parental whole blood may also be given by intramuscular injection (half dose into each buttock).

DOSAGE (UNDER 5 YEARS)	DAY AFTER EXPOSURE		
	1 to 5	6 to 9	10 to 14
	Prevention	Modification	Modification
Convalescent serum	5 cc.	25 cc	5 cc
Adult serum	10 cc	5 cc.	10 cc
Parental whole blood . . .	30 cc	15 cc.	30 cc

For children over 5 years the above doses should be doubled.

MENINGITIS

The common types are:—(1) Meningococcal, (2) Pneumococcal, (3) Tuberculous, (4) Septic, usually streptococcal or staphylococcal, and spreading from a focus in the middle ear. The general plan of treatment in meningitis has been considerably modified since the introduction of Chemotherapy.

In the first place it is essential to ascertain the type of meningitis present by finding the causal organism or by

recognizing the characteristic changes in the cerebrospinal fluid (see table, page 380)

Therapeutic procedures should, however, be instituted without waiting for the result of lumbar puncture examination, but it is essential to obtain cerebrospinal fluid at once since the Sulphonamide drugs have a rapid action and may render subsequent identification of the organism impossible

Lumbar puncture should therefore be performed immediately in all cases of suspected meningitis and should be followed at once by the administration of the Sulphonamide selected. These drugs have proved to be efficacious in the treatment of all forms of meningitis except the tuberculous

The choice of drugs would appear to lie between Sulphapyridine and Sulphathiazole, the important factors being (1) the early administration, (2) to obtain an appropriate concentration of the drug in the cerebrospinal fluid

Sulphathiazole is less likely to cause toxic symptoms such as vomiting

The following adult dosage may be employed —9 grams a day for 2 to 3 days, gradually reduced over the next six days (See page 350)

If neither of these drugs is available Sulphanilamide should be given.

The patient is confined to bed in a quiet, darkened room. A fluid diet is necessary in the acute stages, but as much nourishment as possible should be administered in the form of milk, eggs, beef tea and sugar. Adequate fluids should be given but not more than 3 pints daily as too much may interfere with the concentration of the drug. In stuporose cases, when swallowing is defective, nasal feeding must be commenced without delay. The bowels should be opened with aperients and careful watch kept on the bladder, since retention of urine may occur. The skin of the back and pressure points need special attention on account of the liability of bed sores to develop, and it may be necessary to cover the knees, ankles and elbows with cotton wool when restlessness is marked

Special symptoms are treated as they arise. Headache may be relieved by ice bags and cold compresses while drugs such as Aspirin, Veganin or Opium in some form e.g. Nепenthe may be necessary. For restlessness Chloral and Bromide is required. Morphia, Diamorphine or Hyoscine may be given with discretion especially in hopeless cases.

MENINGOCOCCAL MENINGITIS (*Cerebro spinal fever*)

This is a notifiable disease and although not usually highly infectious, all articles contaminated by discharges from the nose and throat must be carefully disinfected. The majority of cases require treatment in an institution as a day and night nurse are usually necessary during the acute stages. The special treatment consists of

- (1) Diagnostic lumbar puncture
- (2) The administration of Sulphapyridine or Sulpha thiazole
- (3) The administration of antitoxic serum

Except in young infants and comatose patients short general anaesthesia may be required for lumbar puncture specially if the patient is restless and will not tolerate local anaesthesia.

Sometimes lumbar puncture is unsuccessful and C.S.F. will not flow on account of its thickness. Slight suction with a syringe may then be of assistance. Repeated lumbar puncture is neither necessary nor desirable.

The necessity for the administration of serum is debatable in the light of experience obtained by the use of Sulphonamides. Some authorities rely entirely on the latter but others still prefer to combine the two forms of treatment. It would appear clear however that the intrathecal administration of serum is now unlikely to be necessary and that if it is decided to employ serum it should be given either by the intravenous, intramuscular or intraperitoneal routes the dose for an adult being approximately 50 c.c.s.

Cisternal Puncture

This procedure is now rarely required in cases of meningitis but the technique is retained for purposes of reference

It is undoubtedly a more dangerous operation than lumbar puncture except in skilled hands on account of the proximity of the vital centres in the medulla. If however, the procedure is properly carried out, these should be avoided by a wide margin. A lumbar puncture needle, preferably graduated in centimetres is used. The patient lies on his side with the neck flexed so that the chin almost rests on the chest. (This is sometimes difficult if nuchal rigidity is marked, the spasm however relaxes with anaesthesia.) The point of entrance of the needle is in the mid line in the depression immediately above the spine of the second cervical vertebra. This spine is the first bony prominence felt if the finger is passed downwards from the base of the occiput. The operator should aim at the centre of a line joining the two external auditory meatuses a point in direct line from the puncture to the glabella. No harm is done if aim is taken slightly above this line. The needle will then strike the base of the occipital bone just above the margin of the foramen magnum. It may then be withdrawn slightly, depressed and pushed forwards again through the dura into the cistern. In either case the operator can feel the point of the needle passing through the occipito atlantoid ligament and he should then immediately withdraw the stylet. The cistern lies at a depth of 4 to 5 cm in the adult and when the point of the needle is just within the cistern it is about 2 cm away from the floor of the fourth ventricle.

Prophylaxis In the event of a serious epidemic a vaccine may be employed to immunize members of the community. Children who have been in contact with a case should be excluded from school for 3 weeks. Carriers may be detected by careful swabbing of the naso-pharynx and, rather than being isolated in an institution should have an open air life until the organism can no longer be recovered from the naso-pharynx. Nasal sprays of 15% Zinc Sulphate may be used both for carriers and contacts.

POST-BASIC MENINGITIS (of infants)

This is a form of meningococcal meningitis and if seen within the first week may be treated on the lines just described. After this period serum would not appear to be effective and lumbar puncture supplemented by Sulphapyridine or Sulphathiazole should be carried out.

PNEUMOCOCCAL MENINGITIS

Prior to the introduction of Sulphapyridine this type had a very bad prognosis. Recently however a number of recoveries have been reported. Full doses of the drug are necessary and intravenous injection may be desirable. Pneumococcal antiserum of the appropriate type given by the cisternal route e.g. 20 000 units daily, is also justifiable.

SEPTIC MENINGITIS

The majority of cases follow suppuration of the middle ear. The administration of Sulphapyridine or Sulphanilamide should be commenced at once. Lumbar puncture may be necessary and surgical procedures such as trans-labyrinthine drainage may be required.

CHRONIC MENINGOCOCCAL SEPTICÆMIA

This condition would also appear to be most satisfactorily treated with Sulphapyridine or Sulphathiazole.

TUBERCULOUS MENINGITIS

This condition would appear to be invariably fatal and symptomatic treatment for the relief of headache and restlessness is all that can be done.

MICTURITION, DISORDERS OF

In the majority of instances disorders of micturition are symptomatic and in order that appropriate treatment may be carried out a careful search must be made for any underlying cause.

Frequency of Micturition common causes include diabetes chronic nephritis, pyelitis and cystitis prostatic enlargement and chemical changes in the urine e.g. oxaluria and phosphaturia. Mixtures containing Belladonna and Hyoscyamus are useful for irritability of the bladder or Chlorbutol (Chloretone) 5 grams may be tried.

Difficult Micturition e.g. prostatic enlargement urethral stricture and disorders of the central nervous system.

Retention of Urine This may be due to the same causes but, in addition, is often purely functional in character. The condition, however, requires prompt treatment and it is to be remembered that many cases of so called incontinence are actually due to retention with overflow.

TREATMENT

In *acute retention* efforts should be made to induce the patient to pass urine naturally before resorting to a catheter. Any of the following methods may be tried.

1 Suggestion i.e. turning on a tap and allowing the patient to hear the sound of running water.

2 Hot fomentations over the bladder.

3 An enema. This is often very effective.

4 Altering the position of the patient, if he is confined to bed, i.e. allowing him to sit over the edge of the bed, to adopt the knee chest posture or to turn on his side.

5 A drink of hot tea or hot lemon.

6 In suitable cases a hot bath the patient being directed to micturate into the water.

7 In non obstructive retention especially of the post partum and post-operative type the injection of 1 c.c. (containing 0.25 mg.) of Carbachol (Doryl) has been recommended. A temporary fall in blood pressure associated with sweating may occur. The injection may be repeated at intervals of half an hour until a total of 3 c.c. has been given.

If these measures fail a soft rubber catheter may be passed. In no case should retention be allowed to continue for more than 12 hours.

Retention with Overflow The bladder must not be

emptied at once. As a rule, about 20 oz. of urine should be withdrawn and the catheter left *in situ*. The end may be closed with a *spigot* or some form of pressure clamp. A similar quantity is removed at intervals of 2 hours until the bladder is empty and the patient is able to control *micturition* himself. Alternatively, an intravenous drip bulb may be connected to the catheter and the rate of decompression regulated by a bull-dog clip.

It is often wise to give a urinary antiseptic for a few days after trouble of this sort.

ENURESIS (IN CHILDHOOD)

In the majority of instances this is a purely functional disturbance, but care should be taken to exclude congenital abnormalities, diabetes mellitus and insipidus, renal disease such as pyelitis, or any source of peripheral irritation, e.g. thread worms which require attention in the first place.

Whatever line of treatment is eventually adopted, and many forms have been recommended, the most important points to remember are

- 1 The child is probably of a hyper sensitive type and the infirmity produces a sense of shame associated with loss of self-confidence which, with continual disappointment, constitute a vicious circle.

- 2 The condition can only be considered as a pathological phenomenon when it persists after the age of 2 years, or develops for the first time at a later date.

- 3 In many instances the condition has its origin in parental mismanagement and in any case the parents are almost invariably pessimistic, an attitude which requires correction.

- 4 The influence of suggestion is of great importance and should be brought to bear whenever possible throughout treatment. This includes encouragement when there has been any success especially when any new line of treatment has been adopted, and avoiding reproof of failures.

- 5 Treatment may commence by instituting a scheme for re-education of the bladder during the day. Start with

2 Simple measures should be tried first e.g. Aspirin combined if necessary with Phenacetin 15 grains and Caffeine 5 grains

3 If these fail Veganin Veramon or Compral may be tried

4 Ergotomine Tartrate (Femergin Sandoz) is one of the most effective methods of relieving an attack of migraine

(a) The subcutaneous injection of 0.5 milligram but not more than two doses in 24 hours

(b) Oral administration of 3 to 4 milligrams at the onset followed by 1 to 2 milligrams hourly until not more than 10 milligrams have been taken.

(c) The injection of 0.25-0.5 milligram ($\frac{1}{4}$ to 1 ampoule) intravenously at the commencement of an attack gives quickest results but may be followed by nausea vomiting and muscular pains

Gangrene of the extremities has been recorded after the use of Ergotamine an indication that it should not be employed in the presence of arterial disease. It is also contra indicated in pregnancy thyrotoxicosis hyperpiesis hepatic and renal disease. Its use should be restricted to severe cases which do not respond to analgesics and to those individuals in whom it does not produce unpleasant side-effects

5 Injections of Adrenalin (1 in 1000) 10 minims and Acetylcholine 0.1 gram have been tried.

6 The passage of a duodenal tube and withdrawal of bile has been advocated in the biliary type

7 In severe attacks the intravenous injection of Soluble Phenobarbitone 3 grams in 12 c.c. of sterile water has been recommended

MOLLUSCUM CONTAGIOSUM

1 The application of pure Laquefied Phenol on a sharpened match stick into the centre of the lesion is generally effective but may have to be repeated.

2 Freezing with CO₂ snow is useful

3 Multiple lesions may be treated with X rays

MUMPS

Incubation period = 21 days

Infectious period = 21 days

Quarantine period = 25 days

Confine to bed for 10 days Give aperient at onset

Diet Give semi-solid at first for severe trismus fluids may be taken through a straw or glass tube

For pain, apply Glycerin of Belladonna, or Antiphlogistine Give Aspirin or Dover's Powder if necessary

For orchitis, wrap the testicle in cotton wool and support on a pillow or sand bag Ice, Lead lotion or fomentations may be applied

For encephalitis, symptomatic sedative treatment should be given and lumbar puncture may be necessary

In epidemics, the injection of 10 to 20 c.c. (children) 40 c.c. (adults) of convalescent serum may prevent or modify the attack and the incidence of orchitis if given early to non immune contacts

MUSCULAR DYSTROPHY

Various types exist and routine measures include exercises, massage and passive movements together with electrical treatment in order to prevent contractions

Recently, clinical improvement has been obtained in some cases by the administration of Glycine, 15 grams, daily. This may be cheaply prepared by boiling 80 to 100 grams of Gelatin down to a jelly which contains about 20% of Glycine

Another method of treatment which has been recommended is the injection of Adrenalin, 1 in 1000, 0.3 c.c., combined with 0.2 c.c. of a 1% solution of Pilocarpine Nitrate, daily for fifty doses

MYASTHENIA GRAVIS

The advances in the treatment of this rare disease have been so recent that further modification may be expected and it is impossible to be dogmatic about the correct routine to adopt in every case

The most useful drug to employ is Prostigmin (Roche Products Ltd) (the analogue of Physostigmine, but less

at intervals until the tumour has disappeared not more than 4 to 5 minims being injected at each sitting

NARCOLEPSY

The tendency to attacks of unconsciousness resembling sleep from which the patient can be roused may be reduced by the administration of Ephedrine in doses of $\frac{1}{4}$ to $\frac{1}{2}$ grain given in the morning and at midday. The addition of Caffeine 5 grains is said to enhance its effect.

Benzidrene has also been employed in doses of 10 to 30 milligrams. Vaso motor reactions sometimes occur the drug should be avoided in hypertension and cardiac disease.

NEPHRITIS

Nephritis will be classified into the main clinical types according to the treatment required by each.

ACUTE NEPHRITIS

This is seen in two main forms

1 *Acute Focal Nephritis* occurring early in the course of some other infection and characterized by blood and albumin in the urine without œdema or elevation of blood pressure. The duration is generally short and the process rarely becomes chronic.

The treatment consists of rest in bed with adequate warmth. A light diet should be given the bowels regulated and Potassium Citrate e.g. 30 grains t.d.s. administered by mouth.

2 *Acute Diffuse Nephritis* This occurs characteristically during the third week of scarlet fever or between 1 and 3 weeks after an attack of acute tonsillitis or some other infection which appears to be of hæmolytic streptococcal origin. It may therefore be of an allergic nature and dependent on some alteration to the capillaries.

Careful treatment is desirable and every effort should be made to minimize the permanent damage to the kidneys and the progress into the chronic stage.

(a) *General Measures*

The patient should be kept in bed in a warm room and shielded from draughts. He should be nursed between

blankets in a flannel nightgown and for purposes of toilet and examination should be exposed as little as possible in order to avoid undue chilling of the body surface. To prevent the excessive accumulation of oedema in the most dependent parts by gravity he should be moved from side to side at intervals and permitted to lie on his face. Estimation of the blood pressure and the albumin content of the urine (by Esbach's method) should be carried out at intervals daily if possible.

(b) Diet

In this type of nephritis protein is excluded from the diet as far as possible and salt should not be taken if oedema be present although salt free cooking is rarely necessary. Moderate quantities of fluid are allowed but milk should be restricted on account of its high salt and protein content. During the first few days 1 to 2 pints of fluid may be taken by an adult during 24 hours and gradually increased to a maximum of 3 pints by the end of a week or two if the case is progressing favourably. (For a child of 10 about half these quantities may be given.)

1ST STAGE DIET (3 days to a week) either

(a) Starvation diet especially in severe cases

All food except orange juice is forbidden.

One pint of orange juice sweetened with sugar if desired is taken during 24 hours. This requires about sixteen oranges. 3 oz (90 cc) are given at 6 a.m. 10 a.m. 12 noon 3 p.m. and 4 oz (120 cc) at 6 p.m. and 8 p.m.

This may be carried on for some days (10 to 14 if necessary) until the blood pressure falls and oedema diminishes.

Or (b) Milk $\frac{1}{2}$ pint, diluted if desired to the total amount of fluid allowed with soda water barley water lime water or weak tea. Benger's food or arrowroot may be allowed instead of milk and may be sweetened with sugar. Orange juice. Plain toffee up to $\frac{1}{2}$ lb daily if it does not produce nausea.

2ND STAGE (2 to 3 weeks) Carbohydrates and starchy foods such as bread and butter potatoes vegetables fruit milk puddings with cream and jam are gradually added.

3RD STAGE (3 to 4 weeks) Add two eggs

4TH STAGE (4 to 5 weeks) Add fish, chicken and rabbit

(c) *Purgation*

This is especially indicated if œdema be marked and the aim should be to obtain one or two watery motions a day by giving e.g. Magnes Sulph dr 1 to 2, every morning or Pulv Jalapæ Co, dr 1 For children Cascara, Cream of Magnesia or Compound Liquorice Powder may be employed.

(d) *Excretion by the Skin*

Efforts should be made to induce sweating but it must be remembered that this may depress the heart. The pulse should therefore be watched and the attempts discontinued if the condition of the patient causes any anxiety. The methods employed are hot packs, hot air and radiant heat baths and sponging with hot water, the treatment lasting not more than 15 to 20 minutes at a time.

(e) *Treatment of Complications*

1 Vomiting (see also page 339) Ice to suck Tinct Iodi, one drop in a tablespoonful of water every hour Acid Hydrocyan Dil, 2 to 4 minims Rectal saline if vomiting is severe

2 Heart failure Complete rest Venesection 20 oz Strophanthin intravenously, $\frac{3}{16}$ to $\frac{1}{16}$ grain followed by Tinct Digitalis, 10 to 20 minims, every 4 hours. As an alternative to Strophanthin and Tinct Digitalis Digoxin 1.5 milligram, followed by 0.25 mgm three times a day may be given by mouth and is preferable Morphia $\frac{1}{4}$ grain for restlessness

3 Hypertensive encephalopathy (see page 178) Venesection Lumbar puncture Morphia Purgation

4 Anæmia Iron in full doses (see page 8)

(f) *Treatment of the Cause*

The possibility of a focus of infection, especially the tonsils should be considered. Septic teeth and otitis media must also be included. Active measures should not, as a rule be undertaken in the very acute stages and it must be remembered that recrudescences may follow surgical interference

It is wise not to remove tonsils until the severe symptoms, hypertension and œdema have subsided, and some authorities state that tonsillectomy has no effect in preventing exacerbations or the activity of the disease

SUBACUTE AND CHRONIC NEPHRITIS (Hydræmic Type—Large White Kidney)

Except in the later stages, there is little tendency to nitrogen retention but, in order to assess the functional activity of the kidneys and the progress of the disease, in addition to routine chemical and microscopical examination of the urine and estimation of the blood-pressure, the blood-urea and urea concentration test should be carried out from time to time

UREA CONCENTRATION TEST.

No fluid is taken for several hours, the bladder is then emptied and the patient is given 15 grams of Urea dissolved in 100 c.c. of water. The urine is collected 1 and 2 hours later. The first specimen should contain at least 1.5% and the second 2% of urea, as estimated by the hypobromite method, if the concentrating power of the kidneys is to be considered efficient

BLOOD EXAMINATION (Normal Figures)

Urea	.	.	.	20 to 40	mgm. per 100 c.c.
Cholesterol	.	.	.	140 to 180	" " " "
Uric Acid	.	.	.	2 to 3.5	" " " "
Chloride	.	.	.	500	" " " "

Urine (24 hours)	Volume in c.c.	Specific gravity	Albumin per 1000	Urea Grams.	Chlorides Grams
Normal	1500	1015-1025	—	30	15
Acute nephritis	200-600	1025-1035	10-20	7	2
Subacute and chronic nephritis (hydræmic—large white kidney)	500-1000	1020-1030	10	15	2
Chronic azotæmic nephritis (granular kidney)	2000	1005-1015	1	15	15

The active treatment in this type of renal disease is mainly directed to reducing the œdema present, removing septic foci and avoiding superimposed infections, either local or general

Diet

The diet suitable in any case of nephritis must depend on the state of the kidneys and their power to excrete nitrogenous waste products. So long as there is no tendency to nitrogen retention and the urea concentration test is satisfactory, good results follow the administration of a diet rich in protein, while in certain cases of advanced renal disease protein may be injurious. In the first type of case, generally speaking, an ordinary, palatable and easily digested diet may be allowed.

In some instances, marked œdema will subside on

EPSTEIN'S HIGH PROTEIN DIET

Protein	4 to 8 oz	(120 to 240 grams)
Carbohydrate	5 to 10 oz	(150 to 300 ")
Fat	$\frac{1}{2}$ to $1\frac{1}{2}$ oz	(20 to 40 ")
Total fluids	40 to 50 oz	(1200 to 1500 cc)

The effect of this diet is probably due to the diuretic action of the urea produced by the metabolism of the increased amount of protein and the same effect can be obtained by the oral administration of this substance together with an ordinary diet. In any case, with the disappearance of œdema, the protein intake should be reduced to 60 to 70 grams a day. Salt should be restricted only when œdema is present, and milk must, therefore, not be taken in large amounts on account of its high salt content.

Diuretics

1 Urea. Provided there is no nitrogen retention, a most effective diuretic is Urea, 15 to 20 grams given twice or three times a day in 2 oz. of water for a week or longer but tends to increase thirst.

2 Mersalyl. While the use of this drug is absolutely contra indicated in acute cases and chronic interstitial (azotæmic) nephritis, it may be used with great benefit in cases of chronic hydræmic nephritis, especially if the œdema

is not reduced by other measures. A preliminary dose of $\frac{1}{2}$ c c by intravenous or intramuscular injection should be given and followed by further doses of 1 or 2 c c, daily, every other day or twice a week, if no abnormal after effects are noticed. When given intravenously it is wise to dilute Mersalyl with 5-10 c cs of saline (See also page 168.)

Purgation

The regular use of saline aperients preferably Magnesium Sulphate, is advisable, but Calomel should not be employed regularly on account of the liability to mercurialism.

Additional Points

Thyroid, starting with doses of $1\frac{1}{2}$ grains (0.1 gram) increasing up to 15 grains (1 gram) daily, is sometimes given with benefit.

Complications

These must be treated as they arise. Serous effusions should if possible be left alone, but a hydrothorax causing dyspnoea may require aspiration. The tapping of ascites is sometimes followed by a secondary infection. Both conditions may often be relieved by the action of Mersalyl.

CHRONIC INTERSTITIAL NEPHRITIS

(Azotæmic, Granular kidney, arteriosclerotic and hypertensive Types)

The azotæmic type of nephritis with nitrogen retention and its marked tendency to cardiovascular complications may follow the hydræmic type or may develop slowly without evidence of previous ill health.

There is no cure for the condition and the treatment is directed (1) to retarding the progress of the disease by eliminating factors which tend to aggravate it e.g. over work, dietetic indiscretions alcohol, etc., (2) Treating symptoms as they arise, (3) Delaying as far as possible the sequelæ e.g. cardiac failure uræmia and cerebral hæmorrhage.

This means careful regulation of the daily routine

1 Exposure to damp and cold should be avoided and spending the winter either abroad (Canaries Madeira West Indies) or on the South Coast in some mild dry climate is often advisable. High altitudes are to be avoided. Woollen underclothing should be worn and moderate exercise without sudden strains is beneficial in the absence of cardiac weakness.

2 Anxiety and mental strain should be avoided.

3 The bowels should be carefully regulated. Morning salines are useful or Cascara Compound Jalap Powder or a similar aperient may be taken at night in doses suited to the individual.

4 Baths. A hot bath at night or a Turkish bath at regular intervals is of value in keeping the skin active if the condition of the patient permits and there is no cardiac weakness.

5 Diet. There is indication for some protein restriction but this is not infrequently carried to unnecessary extremes. As a rule between 50 and 60 grams of protein should be allowed each day and this may be obtained by a liberal easily digested diet containing fish chicken cheese milk cream eggs cereals fruit vegetables and salads. In mild cases meat may be allowed three times a week or even once a day. The fluid intake should be 3 pints a day if there is no oedema. Alcohol strong tea and coffee are best avoided.

Special Symptoms

1 *Oedema*. In this type of nephritis oedema is often due to cardiac failure and requires treatment by rest restricted fluids and Digitalis.

R. Tinct Digitalis	m 10
Tinct Nucis Vom	m 5
Tinct Cardamom Co	m 20
Infus Gent Co	ad 1 oz t d s

Caffeine Citrate 5 grams t d s may also be given or Pil Hydrarg Diuretica two or three times a day for a short period.

2 *High Blood pressure* No attempt should be made by active measures to lower the tension which is an integral part of the disease, a falling blood pressure often indicating myocardial weakness. Small doses of Sodium Nitrite, 1 to 2 grains, or Tab Glycerylis Trinitratis, $\tau \frac{1}{2}$ grain may relieve severe headache, and Potassium Iodide 5 grains, t d s, may be given in short courses if desired. Periodic venesection is sometimes of value in plethoric patients.

3 *Insomnia* Chloral and Bromide, 20 grains of each, Paraldehyde, Cannabis Indica, or one of the Barbiturates may be employed. Opium or Morphia are rarely required in nephritis, but when necessary can be given with safety in moderate doses.

(Uræmia, see page 336.)

(Hypertensive Encephalopathy see page 178.)

NEURALGIA

Neuralgic pains are perhaps most commonly situated around the head and neck. Care must be taken to exclude dental caries or apical abscesses and catarrh or suppuration in the nasal air sinuses, which should receive appropriate treatment.

For relief of pain see Neuritis (local treatment and drugs, page 229). The following prescription may also be found useful.

R. Tinct Gelsemii	m 10
Liq Arsenicalis	m 2
Sodu Brom	gr 10
Aq Menth Pip	ad 1 oz. t d s

Dental Neuralgia and Toothache In the absence of expert dental treatment, pain may be relieved by cleaning out the cavity of the affected tooth and packing it with wool soaked in (a) equal parts of Menthol, Carbolic Acid and Oil of Cloves, or the last named alone may be used, or (b) Dentalone (Parke Davis). If pain is due to periodontitis, heat should be applied to the face and Tincture of Iodine may be painted on the surrounding gum. In any case, subsequent extraction of the tooth may be necessary.

Trigeminal Neuralgia (*Tic Douloureux*)

Recently attempts have been made to produce improvement by the administration of Nicotinic Acid in doses varying from 50 milligrams twice daily to 75 milligrams four times daily. Paroxysms of pain may be relieved by inhalations of Amyl Nitrate.

If simple measures fail, the severity of the pain demands active procedures which can only be carried out by the expert.

(a) Injection of the nerve root or the Gasserian Ganglion with alcohol. (See Sontar, H. S., *Lancet*, 1934, ii, 529.)

(b) Section of the sensory root of the fifth nerve.

(c) Radiation with X ray which is said to be beneficial in some cases.

NEURITIS

The treatment of neuritis is directed towards the local or constitutional cause in addition to the relief of symptoms. Local causes include (1) Trauma, (2) Pressure of tumours, cervical rib, etc. (3) Spread of local inflammation, (4) Exposure to cold.

Constitutional causes (1) Gout, (2) Diabetes, (3) Syphilis, (4) Diphtheria, (5) Alcoholism, (6) Metallic poisons, e.g. lead, mercury, arsenic. (7) Focal sepsis.

SYMPTOMATIC TREATMENT

1 *Rest* Except when the neuritis is mild and strictly localized, rest in bed is advisable. In any case, local rest is necessary e.g. an abduction splint for brachial neuritis. Splinting may also be necessary in order to prevent overstretching of paralysed muscles, e.g. wrist or foot-drop.

2 *Diet* A light easily digested diet is generally advisable. In chronic cases when the pain may be exhausting, it is essential for the patient to be well fed. Special dietetic measures are required for gouty and diabetic subjects. In all cases alcohol should be forbidden.

3 *Local Treatment* In the acute stages relief from pain may be obtained by radiant heat, infra red rays, a hot-

water bottle or applications of Antiphlogistine. Alternatively the affected part may be wrapped in cotton wool Thermogene or in lint soaked in Methyl Salicylate liniment.

Massage and electrical treatment should be avoided at this stage. When the local tenderness has subsided massage may be commenced and combined with diathermy. Finally electrical treatment may be employed.

4 *Drugs for the Relief of Pain* Aspirin is one of the most useful drugs. It may be given alone or combined with Phenacetin and Caffeine or Codeine. Veganin is a useful preparation of this type. In severe cases the following mixture may be used but does not keep well.

R. Acid Acetylsalicyl	gr 10 to 15
Liq Ammon Acetat Fort.	m 20
Nepenthe	m 15 to 30
Aq Chloroformi	ad 1 oz
Twice or thrice daily	

or R. Phenazoni	gr 10
Spt Ammon. Aromat	m 20
Aq Menth Pip	ad 1 oz t.d.s

Also *vide infra* Sciatica

If preparations containing Amidopyrine are used the production of fatal agranulocytosis in those who show idiosyncrasy must be remembered.

In very severe cases when sleeplessness is not relieved by Chloral and Bromide or Paraldehyde and when pain is excessive Diamorphine $\frac{1}{2}$ grain or Morphia may be given for short periods only.

5 *Attention to General Health* During convalescence give Cod liver Oil with Malt and tonics.

e.g. R. Quin Sulph	gr 1
Acid. Hydrobrom Dil.	dr $\frac{1}{2}$
Syr Aurant	dr $\frac{1}{2}$
Aq ad 1 oz t.d.s	

or Syr Ferri Phos cum Quinina et Strychnina (B.P.)
dr $\frac{1}{2}$ to 1, t.d.s

Focal sepsis should be dealt with when the acute symptoms have subsided

Potassium Iodide may be given especially in cases due to metallic poisons

Vitamin (B₁) (Aneurin) has been used in the treatment of all forms of neuritis especially in the alcoholic types

SPECIAL TYPES

Brachial Neuritis The arm should be placed in an abduction splint

Ulnar Neuritis An anterior forearm and cock up hand splint should be worn while the arm is supported in a sling during the acute stages When the condition is due to local pressure in the region of the elbow joint the operation of transposition of the nerve may be carried out

SCIATIC NEURITIS, SCIATICA

A thorough general and neurological examination is necessary in every case Rectal examination and X ray of the hip and sacro iliac joints should also be done in order to exclude pelvic tumours arthritis and other conditions which may give rise to neuritic pain in the leg

Severe cases require rest in bed often with limitation of movement of the affected leg e.g. by sand bags a long Laston splint extending from the axilla to the ankle or a plaster spica if necessary including the knee joint

The bowels should be carefully regulated for an over loaded rectum may press on the nerve trunks

Relief of Pain—vide supra The following alternative prescriptions may be used in this or other forms of neuritis

	R. Tinct. Gelsem.	m 10
	Potass. Bromid.	gr 10
	Ammon. Chlorid.	gr 7
	Phenacetin.	gr 5
	Caffem Cit.	gr 2
	Aq. Chloroformi	ad 1 oz. t.d.s.
or	R. Phenacetin.	gr 10
	Acid. Acetylsalicyl.	gr 10
	Pulv. Tragacanth. Co.	qs
	Aq. Cinnamon.	ad 1 oz. t.d.s.

Local Treatment—vide supra This consists of the application of some form of heat. The most simple methods are warm wool, Thermogene or a hot-water bottle. In addition Antiphlogistine, radiant heat, and Paraffin Wax baths may be employed. Diathermy, if available, is particularly valuable.

Paraffin Wax Baths A quantity of hard Paraffin Wax is heated in a water bath to a temperature of 160°F . The melted wax is then applied with a large paint brush to the painful parts of the limb in a series of coats. The wax is allowed to remain in position for an hour. There is no risk of burning the patient with dry heat at this temperature.

Persistent pain may be treated in one of the following ways:

1. The injection of 50 c.c. of sterile normal saline (a) into the neighbourhood of the nerve where it leaves the sciatic notch, or (b) directly into the nerve sheath at the level of the ischial tuberosity (lower border of the gluteus maximus). The course of the nerve should be marked out on the skin before the injection is made. (Surface marking = a line drawn from the mid point between the ischial tuberosity and the great trochanter to the middle of the popliteal space. This may be confirmed by the line of tenderness along the nerve.)

The patient lies on his face and the skin is enæsthetized with 2% Procaine at the selected point. A needle about 4 inches long is inserted at right angles to the surface to a depth varying with the build of the patient who knows when the point of the needle touches the nerve. The operator can also feel the resistance of the sheath.

When the needle is within the nerve sheath the injection of 1 c.c. of saline produces a tingling sensation down the leg. 2 c.c. of Procaine may then be injected and followed by 50 to 60 c.c. of warm sterile saline (105°F). The patient should remain in bed for 48 hours and the injection repeated if necessary at the end of a week. This form of treatment is especially useful when pain has persisted for 5 or 6 weeks.

2 Injection of 20 to 40 c c of 0.25% Procaine Hydrochloride into the sheath of the Sciatic Nerve

3 The intravenous injection of 20 c c of doubly distilled sterile water containing 15 grains of Sodium Sulphate and 15 grains of Sodium Iodide, repeated if necessary, is said to be beneficial in primary sciatica

4 Acute and subacute cases may be treated by the injection of Oxygen around the nerve whereby a sort of protective cushion is produced. Great care must be taken that the point of the needle does not enter a blood vessel. A hypodermic needle is connected to an oxygen cylinder by means of rubber tubing and the rate of flow adjusted till bubbles rise through water at the rate of 10 per second (the needle may be placed in sterile water for this purpose). The needle is then inserted into the subcutaneous tissue of the painful areas and Oxygen allowed to flow until there is a good cushion of subcutaneous emphysema. Several injections may be given at intervals of 2 or 3 days, if necessary.

5 EPIDURAL INJECTION Technique. A preliminary injection of Morphia $\frac{1}{4}$ to $\frac{1}{2}$ grain is given half an hour before the operation is commenced. The patient assumes the knee elbow or lateral position and a point is marked on the skin midway between the two lateral tubercles of sacral cornua at the lowest part of the sacrum (1 inch above the top of the natal groove). After preparing the skin with Iodine, the site is infiltrated with 2% Procaine. A strong needle e.g. a fine-bore lumbar puncture needle 4 inches long is inserted into the sacral canal by piercing the sacro-coccygeal ligament at an angle of 60° and then changing the direction so that the needle is almost parallel with the dorsal surface of the sacrum. If cerebro spinal fluid is withdrawn it indicates that the dura has been punctured and the needle inserted too far. 20 c c of 1% Procaine are then injected and followed by 60 to 80 c c. of sterile normal saline. Some resistance is felt but the injection should be forced in slowly. The patient should remain recumbent for 24 hours. The procedure may be repeated if necessary. This method gives good results in acute and chronic cases.

6 X-ray therapy to the area of exit of the nerve roots from the lower lumbar and upper sacral intervertebral foramina (This method may also be employed for neuritis and neuralgia affecting other nerves, e.g. the brachial plexus, occipital and intercostal nerves. The more recent the inflammation, the more successful the results are likely to be, although there may be a temporary increase in symptoms.)

NOSE, COMMON AFFECTIONS OF NOSE, FOREIGN BODIES IN

If recently introduced, a foreign body can usually be seen when rhinoscopy is carried out. The presence of a unilateral purulent nasal discharge suggests the presence of a foreign body which has been *in situ* for some time and which may be detected with a probe.

General anaesthesia is often necessary for their removal in children, but even if general anaesthesia is employed, the application of Cocaine and Adrenalin facilitates removal by producing shrinkage of the mucosa. Under direct vision, the body may be extracted with forceps, a scoop or blunt hook. The end of a fine probe bent to a right angle is often effective. When general anaesthesia is employed it is wise to open the mouth with a gag and to close the post nasal space by pressure on the soft palate with the finger in order to prevent the foreign body passing into the air passages.

Maggots should be stupefied with Chloroform vapour or irritated with a paraffin spray. They then tend to leave the nose and any remaining may be removed by syringing with a weak Carbolic lotion. Dead maggots *in situ* only act as foreign bodies and promote sepsis.

ATROPHIC RHINITIS (OEZENA)

The conservative treatment consists in keeping the nose clean and free from crusts. The nasal cavity may be packed with cotton wool or gauze. On removing the plug

half an hour later many of the crusts will come away, others may be removed under direct vision. The nose may then be syringed with a weak Boric lotion (1 in 60), normal saline, or Sodium Bicarbonate.

25% Glucose in Glycerin should then be painted thoroughly over the nasal mucosa with cotton wool swabs on a probe, five or six times daily. The patient may be taught to do this himself.

Alternatively, a spray may be used e.g.

R. Ol. Eucalypt	m 15
Paraffin Lq.	oz 1

Operative measures may be carried out on selected cases the most successful being submucous grafting of a piece of rib cartilage or Paraffin Wax injection.

The general health should receive attention, tonics, Cod liver Oil or change of air (seaside) being beneficial.

HEMATOMA OF NASAL SEPTUM

Unless the hæmatoma is quite a small one, it should be incised and the clot evacuated after anaesthetization with Cocaine. The opening should be kept patent for a day or two by the passage of a probe or by the insertion of a small gauze wick.

If incision is not carried out, the swelling should be watched daily for evidence of suppuration. The formation of an abscess demands early incision or there will be grave risk of necrosis of the nasal bones, with subsequent deformity.

NASAL SINUSITIS

In order to obtain confirmation of the diagnosis, transillumination or an X ray may be necessary.

Acute Sinusitis

The modern tendency is to adopt conservative measures as far as possible in all cases of acute sinusitis.

1. The patient should be kept in bed in a semi-recumbent

position especially when the frontal sinus is involved, in order to aid drainage by posture

2 External heat should be applied in the form of fomentations Antiphlogistine radiant heat or infra red rays The last are especially valuable and should be used whenever possible

3 Frequent inhalations of Mentholated steam should be given A few drops of the following may be added to boiling water

R. Menthol.	dr 3
Spt Vin Meth.	ad $\frac{1}{2}$ oz.

Alternatively, Tinct Benzoin Co dr 1 to the pint, may be used

4 Sprays or direct application on wool swabs of Equal parts of 5% Cocaine and Adrenalin (1 in 1000) or preparations containing Ephedrine are also useful

5 If there is marked pyrexia one of the sulphonamide drugs may be given Antistreptococcal serum is unlikely to be required

Surgical measures are not indicated in frontal sinusitis provided headache and local tenderness are gradually subsiding with conservative treatment but should these symptoms increase or persist and if œdema of the frontal or orbital tissues develops surgical procedures may have to be considered

Surgical Measures

Operations to correct deflection of the septum removal of the anterior end of middle turbinate bone or preferably, external drainage may be carried out in frontal sinusitis

Puncture of the maxillary antrum may be necessary The decision to carry out any of these procedures should be in the hands of the specialist

Chronic Sinusitis

If the condition fails to subside with conservative measures such as inhalations or sprays operative measures including antrum puncture or open drainage correction of intra nasal deformities, etc, may be necessary

EPISTAXIS (see page 121)

OBESITY

Obesity may be due to (1) excess of caloric intake over caloric output i.e. an excessive diet with inadequate muscular activity (2) Endocrine disturbances or (3) a combination of both

The first principle in treatment is to give a diet of caloric value below that required for the estimated optimum (not actual) weight of the patient

As a general rule a diet producing 1000 to 1400 calories depending on the severity of the case and the normal activities of the patient is necessary during the period of treatment. The aim should be to produce a loss in weight of 2 lb per week. Such a diet would contain not less than

Carbohydrate	100 grams
Protein	60 grams
Fat	40 grams (- 1000 Cal)

Many diets have been worked out on these lines

The following are given as samples

1 ON WAKING One glass of water

BREAKFAST

Tea or coffee sweetened with saccharine One slice of dry toast 3 oz. of cold tongue boiled sole haddock or whiting Fresh fruit

LUNCH

One glass of water 4 oz. chicken or lean meat (not pork) without gravy Green vegetables and salad (without oil) One Vita-Wheat biscuit Fresh fruit

TEA

Tea without milk or sugar

DINNER

Bouillon Fish 2 to 3 oz game or lean meat Green vegetables and salad. One slice of toast Fresh fruit Coffee with saccharine

(Douthwaite)

Most of the ordinary condiments may be taken, e.g. Worcester sauce, Ketchup, pepper, mustard, vinegar, etc., but are best avoided as they tend to increase the appetite.

Suitable vegetables include lettuce, cucumber, spinach, asparagus, celery, tomatoes, sprouts, cabbage, watercress, cauliflower, seakale and mushrooms.

2 BREAKFAST

4 to 5 oz. of lean meat or fish 1 oz. toast Tea without sugar or milk.

LUNCH

5 to 6 oz. lean meat or fish Any vegetables except potatoes
1 oz. dry toast Stewed fruit 2 glasses of claret if desired

TEA

2 to 3 oz. of fruit 1 or 2 rusks or Vita Weat and a cup of tea

SUPPER

3 or 4 oz. of meat

(Banting)

3 BREAKFAST

Tea or coffee with milk, but no sugar One roll of Energen bread or portion of Vita Weat One pat of butter Grape fruit, orange or apple

11 A.M.

Cup of marmite, or clear soup or beef essence

LUNCH

One egg or piece of cheese or steamed fish One roll with one pat of butter Green salad with tomato or green vegetables
Raw or stewed fruit.

TEA

Tea with milk, but no sugar Dry toast or biscuits One pat of butter

DINNER

Clear soup Lamb cutlet or lean steak or veal (3 oz.) or white fish or chicken Green vegetables Fresh fruit salad or baked apple Small piece of cheese One roll, one pat of butter

BEDTIME

Glass of hot water with juice of one lemon

(Browning)

Excessive restriction of fluids and a salt-free diet are rarely necessary. A vitamin preparation containing A and D should be taken during the period of dieting. The return to a normal diet should be gradual.

Thyroid is a useful adjuvant in certain cases but can never replace dietetic restriction. The dose may commence at 1 grain twice daily and be increased cautiously if necessary. It must be stopped at the first indication of tachycardia or tremors.

Drugs which increase the metabolic rate have recently been suggested for reducing the weight without restriction of the diet. They are not without danger of producing serious toxic symptoms and several cases have ended in the Coroner's Court when individuals have taken them on their own initiative. They should therefore only be employed in exceptional cases and then under the strictest medical supervision.

Dinitrophenol is given in doses of 3 mgm per kilo body weight. Dinitro cresol is more powerful and the dose is smaller i.e. 0.5 to 1 mgm per kilo body weight daily.

Rashes and peripheral neuritis have been described following the use of Dinitrophenol and Thyroid medication is much safer.

OBESITY IN CHILDREN

Dietetic restriction should only be undertaken when the obesity is excessive or gives rise to symptoms and should be very moderate in its severity. Thyroid and other ductless gland products are contra-indicated unless a definite endocrine disorder is present.

ŒSOPHAGUS, FOREIGN BODIES IN

After confirmation by X rays an œsophagoscopy should be performed and the object removed by this means. Admittedly some foreign bodies can be dislodged by the old fashioned probang or coin catcher but its use is both dangerous and unscientific and it should never be employed now that modern methods are available.

OSTEITIS DEFORMANS (Paget's Disease)

In the more advanced stages, the disease is readily recognized by the characteristic thickening and bowing of the long bones and the enlargement of the skull. In the early stages an X ray may be necessary in order to determine the diagnosis and not infrequently it is discovered fortuitously when an X ray is taken for some other purpose.

The disease is a slowly progressive one and little can be done for it. In view of some points of similarity between it and *osteitis fibrosa*, Vitamin D and injections of Calcium Gluconate have been suggested.

Noises in the head associated with enlargement of the skull may be improved with Phenobarbitone.

OSTEITIS FIBROSA

Parathyroidectomy is indicated in the generalised form of the disease, although only in rare instances is a tumour of the glands palpable on ordinary examination. An alternative procedure, which has been tried with some measure of success, is radiation of the glands.

OSTEOMALACIA (Adult Rickets)

An adequate, properly balanced diet must be given. Vitamin D should be provided in a special preparation together with Calcium and Phosphorus by mouth.

In view of the commonly associated pelvic deformity it may be necessary to terminate pregnancy or to effect delivery by Cæsarean section.

OXALURIA

Tendency to the formation of calcium oxalate calculi can be diminished by

- 1 Avoiding excess of milk, eggs, tea and all vegetables rich in oxalates, especially rhubarb, spinach and strawberries.
- 2 Basing the diet on meat, fish, bread, butter, milk and dings, cereals, peas, beans and farinaceous foods generally.
- 3 Give Potassium Citrate, 30 grains t.i.d.; or Magnesium

Carbonate 30 grains t.i.s. which produce salts more soluble than calcium oxalate

4 Large amounts of fluid or diuretic mineral waters should be taken

PANCREATITIS

Except when occurring in mumps acute pancreatitis requires laparotomy as an abdominal emergency. Chronic pancreatitis may also require operative interference if the associated jaundice does not clear up within 6 to 8 weeks. Anastomosis of the gall bladder to the stomach or duodenum may be performed. In the meantime a light easily digested diet is required and preparations containing pancreatic ferments may be given by mouth.

PARALYSIS, FACIAL

Bell's palsy is to be regarded as a fibrosis although some cases may possibly be associated with herpes of the geniculate ganglion. Recovery is usual in about 3 months although it is delayed if taste is affected indicating that the process has extended up the facial canal. In some instances recovery is only partial.

1 External applications such as Tincture of Iodine heat or fomentations may be given.

2 Massage to the facial muscles should be employed.

3 At the end of a week galvanism is useful. The positive pole may be placed at the back of the neck while the facial muscles are stroked in a fan wise manner from the ear with the negative pole. Electrical treatment is contra-indicated when any muscular contracture is present.

4 Internally Sodium Salicylate or Potassium Iodide may be administered. Aspirin. Veganin or similar analgesics may be required for pain.

5 In order to prevent over stretching of the paralysed muscles a piece of copper wire covered with rubber tubing can be bent round the angle of the mouth and hooked over the ear on the affected side in such a way that the mouth is elevated. A piece of strapping may be necessary to

keep this in position. This sling should be worn at night at least in every case

A piece of Elastoplast with the lower end divided close to the angle of the mouth, so that one portion passes to the upper lip and the other to the chin, is an alternative measure of value

6 The application of $\frac{1}{2}$ erythema dose of ultra violet light in areas 1 inch in diameter around the external auditory meatus for three weeks may be of value

7 The mouth must be kept clean and food debris should be removed from the affected cheek Mouth washes should also be used When the eye cannot be closed lavage with Boric lotion is necessary

Operative measures with a view to decompressing the œdematous facial nerve in its bony canal have been suggested for cases in which there has been no recovery of movement after six weeks

Facial paralysis due to caries of the temporal bone or following section of the nerve during an operation on the mastoid process is usually permanent In such instances operative measures to correct the deformity or to re establish the continuity of the nerve must be considered e.g. Facial—hypoglossal anastomosis or nerve grafting (Balance Duel method)

PARAPLEGIA

For care of the skin see Bed sores p 42 In addition

1 A small cushion may be placed under the knees and the weight of the bed clothes carried by a cradle

2 Massage and passive movements aid the circulation

3 Weekly enemata are desirable 2 to 3 pints of saline should be run in slowly Some hours may elapse while this is being returned and for this reason cushioned bed pans are advisable

4 Supra pubic cystotomy diminishes the risk of urinary infection and may be advisable in some cases When this has been performed the tube should be changed at least twice during 24 hours and the bladder irrigated with a

weak solution of Potassium Permanganate Hexamine should be given by mouth

PARKINSONISM (Paralysis Agitans)

Amelioration of this symptom, whether it be of the senile type or due to epidemic encephalitis, may be obtained by the use of drugs, and some diminution in the degree of rigidity or tremor may be hoped for

Paralysis agitans (senile type)

Hyoscine is extremely useful in reducing the tremor of this condition but, in large doses, is liable to produce dryness of the mouth and paralysis of accommodation. By combining the drug with Pilocarpine it has been found that much larger doses may be given without the production of unpleasant symptoms. Without Pilocarpine, Hyoscine, $\frac{1}{16}$ to $\frac{1}{8}$ grain, in water, may be given by mouth, three times a day. By adding Pilocarpine Nitrate, $\frac{1}{16}$ grain, each dose of Hyoscine may be increased to $\frac{3}{16}$ to $\frac{1}{2}$ grain or even more with a corresponding effect on the symptoms.

Post-encephalitic Parkinsonism

The tremor, rigidity and salivation may be greatly diminished by Stramonium. In this instance also the dose may be considerably augmented by the addition of Pilocarpine¹.

Commencing with 10 minims of Tincture of Stramonium in $\frac{1}{2}$ oz. of water on waking after lunch, after tea and at night if rigidity disturbs sleep the dose is increased by adding 1 drachm of the mixture to each of the draughts on alternate days, so that the total dose of Tincture is doubled in 8 days. This method of increase is continued until the patient begins to complain of unpleasant dryness of the mouth or paralysis of accommodation. Pilocarpine Nitrate, $\frac{1}{16}$ grain, is then added to each dose and the whole taken in $\frac{1}{2}$ oz. of water. The same method of increase is then continued, one drachm of the latest mixture of Stramonium and Pilocarpine being added to each dose on alternate days until sufficient relief is obtained or slight

¹ Hurst, A. F., *Lancet*, 1934, 1, 499

toxic symptoms appear By this time at least 60 minims of Tincture of Stramonium, with $\frac{2}{3}$ grain of Pilocarpine Nitrate are being taken The final dose may then be made up in $\frac{1}{2}$ oz of water

In addition, psychotherapy, persuasion and re-education may aid the general outlook of the patient

The tendency to somnolence during the day may be combated by giving Benzedrine, Caffeine or Ephedrine For nocturnal wakefulness, Phenobarbitone or Soluble Barbitone (Medinal) in suitable doses will be found useful

Excessive salivation and dribbling which does not respond to treatment with Stramonium, Hyoscine or Atropine may be improved by deep X ray therapy over the salivary glands

PEDICULOSIS

(1) *Pediculosis capitis.*

Only in exceptionally bad cases is it necessary to cut or shave the hair The aim of treatment is not only to kill the lice but also to destroy and remove the nits The following methods may be employed

1 The simplest method now available is the application of one of the Lethane compounds e.g. Medicated (Lethane) Hair Oil (N.W.F.) $\frac{1}{2}$ dr is required for a child with short hair, 2 dr for an adult with long hair This should be applied to the scalp with a dropper in eight places and massaged over the whole head with the fingers A second application is desirable a week later, before the head is washed

2 Apply a compress of Oil of Sassafras which should also be well rubbed into the hair and scalp Cover the head over-night with a linen or lint cap

3 After smearing the forehead, ears and back of the neck with Vaseline, thoroughly saturate the hair and scalp with ordinary Paraffin oil Long hair may then be wound round strips of cloth soaked in paraffin and enclosed in a bathing cap or one made out of mackintosh or jaconet The hair should be kept soaked in paraffin for 36 hours This is a rather messy procedure and under no circumstances should the individual be allowed near a naked light or fire.

4 Rub "Tar Oil Compound" into the scalp. Wait 5 minutes and then comb out over a basin. Wash well with borax and soap and again wait 5 minutes. Comb the hair again, rinse and dry the hair.

"Tar Oil Compound"

Cotton Seed Oil	20%
Wood Tar Oil	5%
Lemon Grass Oil	1%
Paraffin (Kerosene)	74%

In all cases the hair should be shampooed after treatment and combed carefully with a nit comb. In the meantime hats and hairbrushes should be sterilized: the former by heat, the latter by immersion in hot Lysol (2%).

(ii) Pediculosis corporis

All clothing and bed linen must be disinfected. Baths followed by the application of Sulphur ointment or Ammoniated Mercury (White Precipitate) ointment should be employed.

(iii) Pediculosis pubis

The pubic hair should be cut short and any of the following preparations applied:

1 Ungt. Betanaphthol, or Ungt. Hydrarg. Ammon., night and morning. (Stronger mercurials should not be employed as they may produce dermatitis.)

2 Carbolio lotion (1 in 40) applied on lint.

3 Spraying the parts with Ether is useful provided no naked light is present.

PELLAGRA

The disease may be prevented by the addition of yeast or Marmite to the diet. When it is established the patient should be put on a nutritious diet rich in protein but low in carbohydrate. Fresh meat, fruit, vegetables, tomato juice and Marmite should be included.

Nicotinic Acid 0.5 gram daily (five doses of 100 milligrams), is also effective.

PEMPHIGUS

1 Acute This is a very serious but fortunately rare condition for which no specific treatment exists. If the patient is well enough a daily Potassium Permanganate bath may be given. A continuous bath has also been recommended.

Raw areas may be covered with a mixture of equal parts sterile Liquid Paraffin and Flavine (1 in 500). Successful results with Sulphapyridine have been reported.

2 Chronic Suitable ointments include

(a) Equal parts of Ungt. Zinci and Ungt. Hydrarg. Ammon. Dil.

(b) Ungt. Zinci with 10% Ichthyol.

Arsenic should be given by mouth in the form of Liquor Arsenicalis 5 minims, t.i.d. Quinine intestinal antiseptics and colon lavage with Sodium Bicarbonate or a weak Iodine solution have also been recommended. Mixed vitamin preparations are sometimes given.

Suramin (Germanin, Bayer 205) has been tried in courses by intravenous injection, e.g. 0.5 gram, 0.75 gram and then 1.0 gram until a total of 5 to 6 grams have been given.

PEMPHIGUS NEONATORUM

The simple, epidemic type must be distinguished from the syphilitic form. The latter is often associated with a copper-coloured macular rash. The simple type is highly contagious among new born children, who should therefore, be strictly isolated and attended by special nurses whose duties do not include handling other infants.

The children should be kept warm. All unbroken blisters should be pricked with a sterile needle and dressings should be renewed four hourly during the day and once at night.

The arms should be splinted to prevent scratching.

Sulphapyridine has been employed.

A daily bath of weak Potassium Permanganate may be given.

Any of the following may be applied after cleaning the skin with warm Olive Oil

1 Calamine Liniment containing 15 grains of Ichthyol to the ounce

2 Calamine Liniment containing Hydrarg Ammoniatum (White Precipitate) 2%

3 Zinc Oxide powder, after bathing in 1 in 6 000 Perchloride of Mercury The lesions may be covered with a dry dressing

PEPTIC ULCER

(See also Hæmatemesis, page 143)

MEDICAL TREATMENT

Although there has been much dispute as to the relative advantages of medical and surgical treatment in this condition, there is an increasing tendency to carry out medical treatment in uncomplicated cases

For the definite indications for surgical treatment see below

In the first place the teeth must receive attention and any local sepsis eradicated.

Various schemes of medical treatment have been devised the main principles of all are

1 The diet must produce the least possible mechanical stimulation of the stomach and irritation of the ulcer

2 It must produce the minimum amount of gastric secretion (i.e. HCl)

3 Adequate nourishment must be supplied.

4 The hydrochloric acid must be neutralized, not for getting the control of nocturnal acidity

The scheme given below is a modification of the Sippy and other methods, which has been employed personally and found satisfactory Details have been given because if medical treatment is to be effective, it must be thorough.

It is divided into stages and the transition from one stage to the next is generally carried out at weekly intervals, but if progress appears to be slow or the ulcer is

exceptionally large, a delay in the transition from the third to the fourth stage may be made

IF THERE IS NO HÆMATEMESIS OR SEVERE MELÆNA

First Week

(a) Complete rest in bed except for visits to lavatory

(b) Two hourly feeds of 6 oz each from 6 a m to 10 p m (nine feeds in all) of citrated milk (Sodium Citrate gr 10 to each feed) gruel, Horlick's malted milk arrowroot cornflour or Benger's food Cream (4 oz daily) is added to those feeds not preceded by Olive Oil Sugar is added to taste The feeds are taken with a spoon and may be warm or cold as desired

(c) Routine medicines used throughout treatment

1 Olive Oil, $\frac{1}{2}$ oz, is given before the 6 a m, 10 a m, 2 p m and 10 p m feeds

2 The following emulsion is given before the 8 a m, 12 noon and 6 p m feeds:

R Tinct. Belladonnæ	m 10
Sodu Cit	gr 1b
Emuls Magnes	ad 2 dr

3 One of the following antacids is given in a little water half an hour after four feeds and last thing at night also during the night if the patient wakes

(i) Magnesium Trisilicate	dr $\frac{1}{2}$
(ii) Aludrox	dr 1-2
(iii) Tribasic Magnesium Phosphate	dr 1
(iv) R Soda Bicarb	oz. $\frac{1}{2}$
Mag Carb Pond	oz. 1
Calcu Carb	oz 1
Bismuth Carb	oz $\frac{1}{2}$
(v) Bismuth Carbonate (? antacid)	gr 30

Dose—1 teaspoonful

The first two are the most popular but Aludrox tends to be constipating and the patient will probably require Liquid Paraffin

(d) ADDITIONAL POINTS During the first week an injection of Atropine, $\frac{1}{100}$ gram or Hyoscyamine Sulphate,

$\frac{1}{8}$ grain, is given at 10 p m Liquid Paraffin is given for the bowels If this is not effective, enemata may be given on alternate mornings

Second Week

- (a) Rest in bed except for visits to bath and lavatory
- (b) Add to diet two eggs lightly boiled, poached, or beaten up in milk Increase feeds to 8 oz
- (c) Omit Atropine injections at night if there is no nocturnal pain, but give Atropine, $\frac{1}{8}$ grain, in water by mouth instead

Third Week

- (a) Continue rest in bed
- (b) Add two more eggs making a total of four, and rusks, and thin crustless bread and butter, red currant or apple jelly
- Give 6 feeds of 10 oz each (e g 6 a m, 10 a m, 12 noon, 4 p m, 6 p m, 10 p m)
- (c) Give Olive Oil and emulsion alternately before feeds
- Omit Atropine

Fourth Week

- (a) The patient is permitted to get up for short periods, which are subsequently increased
- (b) Add fruit juice, custard, junket, pounded fish, plain or milk chocolate

Fifth Week

Add pounded chicken and mashed potatoes Give three main meals, i e breakfast, lunch and supper with intervening milk feeds

General Rules

No smoking is permitted Hunger is to be avoided at all times If patient wakes during the night, give a milk feed followed by a dose of alkaline powder The mouth and teeth must be cleaned after each feed

During the strict period of treatment, the majority of patients do better in a nursing home or hospital where their treatment can be thoroughly supervised.

After the Fifth Week

The following diet may be continued for several weeks and gradually increased. An alkaline powder should be taken after the main meals which may be preceded by Olive Oil if hyperchlorhydria is a feature of the case

ON WAKING The juice of an orange.

BREAKFAST, 8 a.m.

Milk or weak freshly made tea, one or two eggs boiled or poached, bread or toast, butter seedless preserve

10 to 11 a.m.

Milk, Horlick's or Benger's

LUNCH, 1.0 p.m.

Vegetable purée, chicken and mashed potatoes (later beef, mutton or brains, boiled but not stewed or fried), junket, custard, jelly, stewed or baked apple

TEA, 4 p.m.

Tea with milk and cream Bread and butter, seedless preserve, biscuits

DINNER, 7.30 p.m.

Vegetable purée Fish and mashed potatoes, milk pudding and cream, bread and butter, grapes without skin or pips

SUPPER, 10 p.m.

Milk, Ovaltine, Horlick's, etc

(For foods definitely forbidden see Gastritis, page 135)

If smoking is subsequently permitted, not more than six cigarettes with filter tips per day should be allowed

Modifications 1 During the first stages, hourly feeds are sometimes given The milk and cream feeds alternate with those consisting of arrowroot, cream of wheat potato or artichoke The modification shown in the table, page 250, may also be used

2 Intensive alkali therapy may be employed. Instead of giving the Magnesium Emulsion, the alkaline powder is given after each feed Prolonged administration may lead to manifestations of alkalosis especially if pyloric stenosis is present or excessive vomiting is a feature of the case

If Alkalosis is suspected, alkalis should be withheld and the alkali reserve and blood urea estimated without delay

If these are raised, acid should be given in the form of Ammonium Chloride, 15 to 20 grains, or Acid Sodium Phosphate, 30 to 40 grains, t.d a, p c, until the alkali reserve has returned to normal. The bowels should be kept well open.

3 A mixed vitamin preparation, e.g. Radiostoleum or Adexolin may be given in small doses throughout the course of treatment.

4 If there is severe melæna or hæmatemesis, see page 143.

5 If at any time there is any return of symptoms the patient should go to bed for a few days and revert to a first week gastric diet. In most cases the addition of extra feeds between the main meals helps to relieve pain.

6 Patients in which the symptoms are associated with anxiety states will benefit by Phenobarbitone, 1 gram, b.d.

7 The presence of an ulcer should whenever possible, be confirmed by X ray, and its progress watched in this way. The periodic examination of the stools for occult blood is also valuable. It is unlikely that an ulcer will be satisfactorily healed in less than three months and a return to normal diet should not be permitted before. Further care should be exercised for at least another three months.

LENHARTZ DIET

This method still has its followers. Various modifications have been suggested.

days	1	2	3	4	5	6	7
Eggs	1	1	2	2	3	3	4
Milk (oz)	3	4	6	7	9	10	12
Glaxo (oz) $\frac{1}{2}$ strength	5	7	10	12	15	17	20
Sugar (dr) (in Glaxo)	—	—	6	6	8	8	12
Plasmon (dr)	—	—	—	—	—	2	3
Blancmange (oz)	—	—	—	—	—	—	—
Pounded fish (oz)	—	—	—	—	—	—	—
Rusks (oz)	—	—	—	—	—	—	—
Butter (oz)	—	—	—	—	—	—	—
Total quantity of fluid per feed (oz)	1	1	2	3	3	3	4
Total Calories	106	240	400	475	580	685	825

	days	8	9	10	11	12	13	14
Eggs		4	3	3	3	2	2	2
Milk (oz)		17	18	19	20	21	22	23
Glaxo (oz) $\frac{1}{2}$ strength		25	25	25	25	25	25	25
Sugar (dr) (n Glaxo)		12	14	14	14	14	14	14
Plasmon (dr)		3	3	3	3	3	3	3
Blancmange (oz)		3	3	7	7	10	10	10
Pounded fish (oz)		—	—	2	2	2	2	2
Rusks (oz)		—	—	1	1	2	3	4
Butter (oz)		—	—	$\frac{3}{4}$	1	1	1	1
Total quantity of fluid per feed (oz)		5	5	5	5	5	5	5
Total Calories		1115	1185	1650	1820	2010	2080	2200

Feeds should be given iced, with a teaspoon at hourly intervals. If thirst be intense during the first 3 days rectal salines may be given. After this 1 oz of water may be permitted between feeds. When the treatment has been completed a light diet is substituted.

FEEDING WITH THE DUODENAL TUBE

This is another method by which successful results may be obtained provided the patient will tolerate the procedure. It is especially indicated in extensive ulcers with deep involvement of the pancreas or other structures.

Method. The patient swallows a small weighted rubber tube similar to the Ryle's tube used for the fractional test meal but of slightly smaller bore. It is swallowed until the bulb is in the duodenum. The following tests ensure that the tube is in place.

- 1 It is swallowed as far as the 22 inch mark.
- 2 On aspiration with a syringe it collapses or alkaline bile-stained fluid returns.
- 3 A small feed of milk is given the immediate return of milk on aspiration indicates that the tube is still in the stomach.

4 Verification may be obtained by means of X ray.

The tube remains in position for a period of several weeks the upper end being passed over the patient's ear and secured to the cheek by means of strapping. The

object of the method is to allow the stomach complete rest by giving nourishment directly into the duodenum. In this way peristaltic movements of the stomach are diminished and the flow of gastric juice reduced to a minimum.

Method of Feeding Eight feeds are given at two hourly intervals between 7 a.m. and 9 p.m. additional feeds being permitted if hunger occurs before or after these times.

The day's nourishment consists of 6 pints of milk and three eggs beaten up divided into eight parts (i.e. about 15 oz.) to which sugar may be added. It is carefully strained through gauze and may be allowed to run in through a small funnel attached to the end of the tube. After a feed has been given a syringe of water followed by a syringe of air is injected down the tube to make sure that its lumen remains clear. Great care must be taken of the mouth as there is neither mastication nor flow of saliva. It must be cleaned regularly and mouth washes given at frequent intervals.

SURGICAL TREATMENT

While this aspect of treatment is still so much under discussion it is impossible to be dogmatic. The following may be taken as more or less definite indications for operation.

- 1 Perforation.
- 2 Pyloric obstruction without active ulceration.
- 3 Pyloric obstruction with active ulceration if still present after 3 weeks of strict medical treatment.
- 4 Hour glass stomach.
- 5 Failure of medical treatment to produce lasting results.
- 6 Where economic circumstances render prolonged medical treatment and subsequent after-care impossible.
- 7 Recurrent hæmorrhage (see Hæmatemesis page 145).
- 8 If there is any suspicion that the ulcer may be malignant e.g. persistence of symptoms or the repeated presence of occult blood in the stools in spite of adequate medical treatment.

PERICARDITIS

Acute Dry Pericarditis

1 Prolonged rest in bed in the most comfortable position, preferably lying flat or with one pillow during the first few weeks. This is especially important in rheumatic variety on account of the associated endocardial and myocardial inflammation. In many cases however, the patient must be propped up. The minimum period in bed for a case of this type should be 4 months.

2 The cause or primary condition should be treated, e.g. give Salicylates for acute rheumatism.

3 *Diet* This must be light and at first consist mainly of milk. Lemon drinks containing plenty of Glucose may be given. Later, an easily digested, nourishing diet must be employed.

4 *Relief of Pain* This is important and should be carried out at once.

(a) **LOCAL APPLICATIONS** Antiphlogistine (provided it is put on lightly and the weight of the poultice is not too great), hot fomentations, or hot linseed poultices may be applied. Antiphlogistine has the advantage that it need not be renewed more than twice in 24 hours. If these fail, an ice bag may be suspended over the precordium so that it just rests on the skin. Packing round with cotton wool helps to keep it in position. Hot water bottles may be applied to the extremities at the same time. Other remedies include leeches, a mustard leaf, Belladonna plaster, wet cupping or a blister applied to the precordium.

(b) **INTERNALLY** Dover's Powder, Nепenthe, Aspirin, or as a temporary measure in very severe cases Morphine, may be given in doses suitable to the age of the patient if pain or insomnia be present. Generally, Opium in some form is valuable.

Pericarditis with Effusion

If the effusion is small or moderate in amount the former treatment must be continued. If large, the fluid intake should be limited, the bowels kept well open with aperients,

and diuretics administered, e.g. Theobromine Potassium Iodide may also be given

Intravenous or intramuscular injections of Calcium Gluconate are said to be of value in reducing the effusion

If the effusion is very large and is causing considerable distress it may be aspirated, either with a needle and syringe or a suitable aspirating apparatus. The needle may be inserted (a) in the fifth intercostal space just internal to the nipple line, or 1 inch to the left of the sternum, in order to avoid the internal mammary artery, or (b) in the angle between the ensiform cartilage and the left costal margin as near to the lower end of the sternum as possible and passed upwards and inwards. The needle must be carefully steadied in order to avoid injury to the ventricle. The latter method of approach should be used if pus is suspected, in order that contamination of the pleural cavity may be avoided

(N.B.—Aspiration is very rarely, if ever, necessary in rheumatic cases)

Special Symptoms If cardiac overaction (persistent tachycardia) be marked the following may be given

R. Tinct. Digitalis .	m. 5 to 10
Pot. Brom.	gr 10
Glycerini	m 30
Aq. Chloroformi	ad ½ oz t.d.s (adult)

If vomiting be marked, Sodium Citrate may be added to the milk, 2 grains to 1 oz., or it may be peptonized. Beef tea or chicken broth may be tried instead of milk. In very severe cases, weak brandy or iced champagne may be tolerated and rectal salines will be necessary. The following mixture may be given

R. Bismuth Carb .	gr 30
Sodu Bicarb. .	gr 10
Acid. Hydrocyan. Dil	m 3
Aq. ad 1 oz. t.d.s or four hourly (adult)	

For severe collapse, injections of Strychnine or Nikethamide (Coramine) may be tried.

Convalescence This should be prolonged and may be preceded by massage and cardiac exercises. An adult should not resume work for at least 4 months after getting up.

Pyo pericardium should be drained by excising part of the fifth costal cartilage. The drainage tube should be left in position for a few days. The outlook in these cases is bad, but occasional recoveries occur.

Hæmo pericardium should be left alone unless due to direct injury when an operation to secure the bleeding point may be necessary.

Adherent Pericardium

In general the treatment is the same as that described for heart disease (page 154) the main principle being that the patient must live within the limits of his heart's strength. In suitable cases operative measures for freeing the pericardium from external adhesions or (in Pick's disease) excising portions of the membrane have been successfully carried out.¹ It is evident that such procedures if contemplated should not be delayed too long.

PERITONITIS

The treatment of *acute peritonitis* is surgical and operation without any delay is usually advisable. While awaiting operation the patient should be placed in Fowler's position and subcutaneous or rectal saline administered if a considerable interval is likely to elapse. Morphine should be withheld until the diagnosis is established and operation agreed to. Under no circumstances should an aperient be given but enemata may be employed when necessary. On the rare occasions when surgical interference is positively refused or absolutely impossible to carry out Fowler's position saline infusions gastric lavage for vomiting and Morphine in large doses should be used.

¹ White P. D. *Lancet* 1935 ii 539

Sulphapyridine should be given in cases of pneumococcal peritonitis

Chronic Peritonitis (Adhesions)

The treatment of this condition is often unsatisfactory. In the absence of intestinal obstruction simple measures such as abdominal massage, suitable doses of Liquid Paraffin and Belladonna by mouth may be tried. In other cases operation may be undertaken in order to divide the adhesions but this is not infrequently followed by recurrence.

Chronic Peritonitis, Diffuse (Polyserositis)

When this is associated with adherent pericardium (chronic constrictive pericarditis) resection of the pericardium is often successful.¹

Tuberculous Peritonitis

The most effective form of treatment is properly controlled heliotherapy. In any case the patient should be kept in bed until the temperature is normal and given a nonriching diet. If the stools contain excess of fat (chylous diarrhoea) fat must be excluded from the diet. Simple diarrhoea demands a bland non residue diet and a Bismuth mixture with or without Opium by mouth.

Operation may be considered in those cases which are known to be associated with a local tuberculous lesion e.g. of the ovaries or Fallopian tubes the removal of which may be of value. In ascitic cases improvement sometimes follows paracentesis or laparotomy. The injection of Oxygen into the peritoneal cavity has also been recommended.

The old method of mercurialunctions to the abdomen is of doubtful therapeutic value but can do no harm and may be of psychological importance.

¹ White P. D. *Lancet*, 1935 ii 539

PERSPIRATION, EXCESSIVE (Hyperidrosis)

A. Generalized

This may be secondary to some primary condition such as phthisis, obesity, chronic alcoholism or hyperthyroidism, in other cases no obvious cause can be found. In the first instance the primary condition, in the latter the general health and hygiene, must receive attention. A daily bath is advisable. Some cases are benefited by the administration of Bromides or Belladonna.

B Localized

The hands, axillæ and, especially, the feet may be affected. In the case of the last, some foetor is generally present (Bromidrosis).

1 The parts should be washed twice daily with soap and water to which Condy's fluid may be added if desired. When the feet are affected the socks should be changed twice daily, and cork socks which can be washed and changed, are often useful.

2 The feet may be dusted with one of the following powders, some of which should also be placed in the shoes

(a)	Bismuth. Subgallatis*	10	parts	by	weight
	Zinci Oxid.	1	"	"	
	Acid. Boric	1	"	"	
	Talc .	8	"	"	

* or "Dermatol (Bayer)

(b)	R. Acid. Salicyl.	gr 10
	Pulv. Talci	oz. 1

or (c) Pulv. Acid. Salicyl Co., B P C

3 Painting the affected parts with any of the following is often effective. 1% Formalin lotion twice daily, 5% Chromic Acid daily (feet) *Lan. Belladonnæ*, Glycerin, 25% solution of Ammonium Chloride allowed to dry on the skin.

4 Ungt. Acid. Salicyl 3% may be used.

5 One of the most effective methods is the application of one or more full pastille doses of X rays given by the expert. This is suitable for any part which may be affected.

6 Proprietary toilet preparations are sometimes effective

PHARYNX, DISEASES OF

Acute Pharyngitis

Give an aperient, followed by Aspirin or Sodium Salicylate, gargles, inhalation of Tinct Benzoin Co and apply fomentations or Antiphlogistine to the neck if the condition is severe or very painful

Chronic Pharyngitis

Any obvious cause must first be removed e.g. excessive use of the voice, excess of tobacco or alcohol, unhealthy teeth or tonsils, nasal obstruction especially if giving rise to mouth breathing. An expectorant mixture may be given

R. Tinct Ipecac	m	10
Vin. Antimonialis	m	5
Potass Iodid.	gr	3
Syrup. Tolu.	dr	1
Aq. ad 1 oz. t.i.d.s		

The throat may be sprayed or gargled with salt and water (1 dr in 10 oz) or painted twice daily with Mandl's paint. In severe cases a weekly application of Silver Nitrate (10 to 20 grains in 1 oz water) may be helpful. In persistent cases with prominent granulations a few applications of the electric cautery may be tried at intervals.

Retropharyngeal Abscess

This is most common in children and, if acute, may be secondary to a specific fever. An acute abscess may be opened with sinus forceps or a scalpel, the blade of which is protected with strapping to within a quarter of an inch of the point. No anæsthetic should be used and the head should hang back over a table so that pus cannot enter the trachea.

Chronic abscesses are usually tuberculous and on no account must they be opened through the mouth. Caries of the cervical spine must be excluded by X ray. An abscess of this type is reached by an incision behind the sterno-mastoid muscle.

PHLEBITIS

1 *Superficial.*

1 Elevate the limb and rest between sand bags or on a back splint

2 Paint the affected area with Glycerin of Belladonna or Tinct Iodi Fort

3 Wrap the limb in cotton wool.

4 Heparin The intravenous injection of this drug (150-250 milligrams in 5% solution or 166 mgms per kilo body weight) helps to prevent thrombosis by acting as an "anticoagulant" Daily injections are generally required. Even after thrombosis has commenced this drug may help to limit its spread

5 The patient should be confined to bed for 3 weeks or even longer

A very satisfactory alternative measure, if the phlebitis is not very extensive or is localized to an area of varicosity, is to place a small rubber pad over the vein above the affected area and strap it firmly in position with Elastoplast in order to compress the vein The rest of the leg below and including the lesion should then be strapped firmly with Elastoplast from the foot upwards The bandage must be left in position for 2 to 6 weeks, but during this period, in many instances, the patient may be ambulant

2 *Deep Thrombosis* (e.g. Femoral vein)

The patient should remain flat in bed The bowels should act easily and for this purpose Liquid Paraffin or a mild aperient must be given The limb should be wrapped in cotton wool and immobilized by splints or sand bags After 6 weeks gentle superficial massage may be commenced When the patient starts to get up an Elastoplast bandage from the foot to the groin is often of value

A mixture of the following type may be given to cases with phlebitis, if desired

R Potass Citratis	gr 15
Ammon Carb	gr 5
Spt Ammon Aromat	m 15
Glycerin.	m 20
Aq Menth Pip	ad 1 oz t.d.s

3 *Septic Phlebitis.*

Operative measures are often necessary and ligature of the vein between the affected area and the heart may have to be considered

In treating any case of phlebitis the danger of pulmonary embolism must be considered

PHTHISIS

The treatment of pulmonary tuberculosis is outside the scope of this book, reference may be made, however, to some of the main principles and to the relief of troublesome symptoms

GENERAL MEASURES

The aims of treatment are to increase the patient's resistance, thereby improving his nutrition and abolishing the toxæmia. In the majority of instances treatment carried out in a sanatorium for a varying period, which often tends to be too short, is advantageous in that "open" cases are removed from home surroundings where they may pass on the infection to others and that the patient can be taught those rules of self-discipline which are essential to him for the rest of his life

1 *Rest.* This must always be the basis of treatment and, it may be taken as a general rule, that the patient should remain in bed while there is any pyrexia

2 *Fresh Air* The effect of this is to improve the general health and to stimulate metabolism. Exposure to very cold, damp or foggy weather is not necessary and is definitely inadvisable in cases complicated by bronchitis

3 *Climate* This rarely plays an important part in the treatment of the disease. Cases in which bronchitis is a factor do better in warm, dry places. On the whole it is wisest to build up the resistance of the patient under the climatic conditions in which he will ultimately reside. A sea voyage is not recommended on account of the doubtful ventilation available in the public rooms and the lack of strict medical supervision, etc

4 *Graduated exercise* the amount of which will depend on the special features of each case. Provided the temperature and pulse remain normal and extensive disease is not present exercise is allowed and gradually increased.

5 *Diet* No special food is usually necessary. Three good easily digested, palatable meals should be taken at regular intervals. One or two pints of milk and plenty of cream are included in the diet. It is a mistake to overfeed tuberculous patients for it will only result in indigestion.

Cod liver Oil with Malt is of value probably on account of its Vitamin content. Calcium Sodium Lactate 20 grains t.d.s., combined with Vitamin D administration may be followed by a gain in weight.

SPECIAL MEASURES

1 *Artificial Pneumothorax* This is particularly indicated in unilateral cases which are not making satisfactory progress with routine treatment those with recurrent hæmoptysis and when early cavitation is present. The guidance of an expert is generally necessary in adopting and carrying out this course.

2 Phrenicotomy, apicolysis and thoracoplasty all have their place in treatment in selected cases.

3 *Sanocrysin* or some other form of chrysotherapy, may also be used in selected cases. This subject requires careful study and selection of suitable patients. No rigid system of dosage can be laid down but in any case care must be taken to avoid severe reactions and overdosage resulting from accumulation of the drug in the tissues.

Exposure to sunlight must be avoided during gold treatment as it is liable to produce abnormal cutaneous pigmentation.

SPECIAL SYMPTOMS

1 *Cough* This often diminishes considerably when plenty of fresh air and adequate ventilation are supplied. Irritating inhalations and excessive smoking should be avoided. The patient should be told to refrain from coughing as much as possible. A suitable linctus may be given e.g.

R Oxymer Scilke	} aa part aeq	dose = dr 1
Tinct. Opi Camphorata		
Syrup Tolutani		
R Syrup Codein	} aa part. aeq	dose = dr 1
Syrup Tolu		

also Linctus Diamorphinæ or a preparation such as Syrup Cocillana Co (Parke Davis) may be used.

2 *Expectoration*, if difficult, may be aided by the use of expectorants (see Chronic Bronchitis)

3 *Night Siccæ* These frequently disappear rapidly when sanatorium regime, with adequate fresh air, is adopted. If persistent, a pill containing Extr Bella-donnæ Sicc, $\frac{1}{2}$ grain, alone or combined with Zinc Oxide, 2 grains, may be given at night

(See also Pleurisy, Pneumothorax, Laryngitis, Hæmoptysis, etc)

PLEURISY, ACUTE DRY

This may occur as a complication of some other condition such as lobar pneumonia, the treatment of which must be the primary consideration. On the other hand the pain of acute pleurisy, whatever the cause, requires symptomatic treatment

Many cases of pleurisy without obvious underlying cause are due to tuberculosis and subsequent careful examination of the chest supplemented by X rays, and sputum tests should be carried out, the patient being kept under observation for some time. He should be advised to lead a steady life with regular rest hours during the day, and to avoid strenuous sports

In any case, the patient should be confined to bed while the process is active. A suitable linctus is generally required in order to reduce the frequency of painful coughing

Local Applications Antiphlogistine is perhaps the most useful application in pneumonia. In other cases strapping the chest with adhesive plaster or Elastoplast is very effective if limitation of movement is obtained by applying the

strapping in expiration so that the ends overlap the mid line both behind and in front

The application of a Belladonna Plaster or Tincture of Iodine may be sufficient in mild cases

The slow injection of 10 to 50 c c of $\frac{1}{2}\%$ Procaine between the parietal pleura and the chest wall in the painful area is of value in severe and persistent cases. Great care should be taken that the needle does not actually penetrate the pleura. The patient can feel the point of the needle as it approaches the pleura.

Anodyne drugs including Morphine for the severest cases may be necessary. Dover's Powder 15 grains given with Aspirin 10 grains. Veganin, Allonal or Veramon are useful.

PLEURISY WITH EFFUSION

Unless part of a general anasarca 5 to 10 c c of fluid should be removed under local anesthesia for cytological and bacteriological examination since the subsequent treatment will depend on the findings. Larger amounts should not be withdrawn at first unless associated with respiratory or cardiac distress.

A large proportion of *clear pleural effusions* are of tuberculous origin and all should be treated as such unless some other aetiological factor is discovered. Aspiration should not be repeated in tuberculous cases unless

- 1 There is no evidence of absorption after 2 to 3 weeks
- 2 There is severe respiratory or cardiac distress in which case not more than 30 oz should be removed.
- 3 There is marked increase in the size of the effusion
- 4 There is evidence of active tuberculous disease in the underlying lung which requires treatment by artificial pneumothorax. In such a case an air replacement of the fluid may be carried out.

Very chronic and recurrent cases may be treated with air replacement after irrigation of the pleural cavity with Dakin's Solution. Air replacement of fluid may be necessary in order to obtain X ray evidence of a pulmonary neoplasm.

The effusion which precedes the development of a streptococcal empyema may be clear in the early stages, but the organisms are obtained on examination. Such an effusion requires repeated aspiration, often daily, until it no longer recurs or a localized empyema which can be dealt with by open drainage is formed.

Blood stained Effusions These may be associated with recent trauma. If such an effusion is large and causing distress it may be replaced by air. Haemorrhagic effusions are commonly associated with new growths of the lung. Aspiration or air replacement of the fluid may render the patient more comfortable.

Purulent Effusions (Empyema) usually require surgical treatment.

PNEUMONIA, LOBAR (Pneumococcal)

At the present time the essential feature of the treatment of lobar pneumonia is the early administration of Sulphapyridine in adequate doses. In the majority of cases little else is required except good nursing and attention to any points of symptomatic treatment which may be necessary.

GENERAL CONSIDERATIONS

The main points in the treatment of the disease are

- 1 Good nursing
- 2 Diminution of the toxæmia
- 3 Relief of symptoms
- 4 *Specific or special lines of treatment*

1 *Plenty of fresh air is essential.* The bed may be placed in front of an open window if weather conditions are suitable and there is no fog but the patient must be kept warm with blankets and hot-water bottles.

2 The patient should be disturbed as little as possible and everything should be done to ensure relief from pain and a maximum amount of sleep. As a rule, he should be nursed in the most comfortable position, generally the semi Fowler position but a seriously ill case or elderly person should not be permitted to remain recumbent.

Tepid sponging should be carried out twice daily or more frequently if the temperature exceeds 103° F. It is especially valuable towards evening when the temperature is at its highest but on no account should the patient be awakened for purposes of washing.

3 An adequate amount of nourishment and copious fluids must be given. In the early stages the diet consists of liquid and semi solid foods including milk arrowroot, cornflour fruit juice jelly custard junket broth and eggs. Sugar should be given in large quantities e.g. up to $\frac{1}{2}$ lb of Glucose in 3 to 4 pints of water flavoured with fresh lemons during 24 hours.

If the fluid intake is deficient 1 pint of 5% Glucose in normal saline might be given intravenously or a rectal saline may be tried.

The mouth should be cleaned after each feed.

4 The bowels generally require some attention. Calomel 3 grains may be given at the onset but subsequent purging must be strictly avoided. Saline aperients mild laxatives or preferably enemata on alternate days are usually adequate.

Troublesome abdominal distension may be relieved by passage of the rectal tube. Turpentine enemata or an injection of Pituitrin $\frac{1}{2}$ to 1 c.c.

5 A simple diaphoretic mixture may occasionally be indicated during the early stages.

(a) R	Liq Ammon. Acetat Dil	dr	2
	Potass Citrat	gr	20
	Syr Aurant	dr	1

Aq ad 1 oz, every 4 hours

or (b) R	Liq Ammon. Acetat Dil	dr	2
	Spt Ætheris Nit	m	30
	Potass Acetat	gr	15
	Aq Camphoræ	ad 1 oz	every 4 hours

or (c) if the cough is troublesome and the sputum tenacious

R	Liq Ammon. Acetat Dil	dr	1
	Tinct Ipecac	m	5
	Spt Ammon. Aromat	m	10
	Ammon. Carb	gr	5
	Spt. Chloroformi	m	10

Aq ad 1 oz every 4 hours

RELIEF OF SYMPTOMS

1 *Pain* (see also *Acute Pleurisy*) The measures at our disposal are

(a) *Local applications*, e.g. Antiphlogistine, Linseed poultices, leeches. The first named has the advantage that it only needs changing once in 24 hours.

(b) *Anodyne Drugs*. Simple measures such as Aspirin or Veganin are often effective. Morphia may be given with confidence in the early stages in the absence of cyanosis when the lung is dry (i.e. the physical signs consist of dullness, bronchial breathing and, perhaps, a very few crepitations). In the later stages (and if many moist rales are present) Morphia combined with Atropine, $\frac{1}{10}$ grain, must be used with the utmost caution but, as a rule, is best avoided. It should be withheld if there is an associated bronchitis.

2 *Cough*. A simple linctus, e.g. Codeine, Diamorphine or Linct. Camph. Co. is usually effective.

3 *Insomnia*. Adequate sleep is essential, especially in the early stages, and determined efforts must be made to obtain it. The relief of pain and cough and the drugs employed for these purposes may be sufficient. In other instances, Chloral and Bromide, Dover's Powder, 10 to 15 grains, Nephenthe, 25 to 40 minims, or Paraldehyde, dr. 2, may be given. If these fail Morphia, Diamorphine or Hyoscine should be given by injection in the early stages. In the later stages, Paraldehyde is probably the safest and most effective drug. If it is not tolerated by mouth, dr. 4 may be given per rectum.

Barbiturates, including Soluble Barbitone (Medinal), Veramon or Allonal may also be employed with caution as they are said to increase the tendency to delirium.

The following combination is often successful and appears to be quite safe, although rather a large number of tablets have to be swallowed.

Dover's Powder	.	gr 10 to 15
Aspirin	.	gr 10
Soluble Barbitone (Medinal)	.	gr 5 to 10

4 *Cyanosis* Oxygen inhalations are very valuable and should be employed early. The simplest method of administration is by means of a nasal catheter (no 10) which should be introduced so that its end is in the nasopharynx. The spectacle frame type is especially useful. The addition of CO_2 would only appear to be necessary if respiratory failure with shallow respirations occurs. An Oxygen tent, if available, is the ideal method of administration, but it must be remembered that a very ill or delirious patient may not tolerate the sensation of confinement. Alternatively, a B.L.B. mask might be used.

The ideal administration of oxygen by any method requires some sort of flow meter, in order that economical and efficient use of oxygen may be obtained. The usual amount of oxygen required is four to six litres per minute.

5 *Circulatory failure* A marked fall in blood pressure, weakness of the heart sounds at the apex, or increasing pulse rate, may call for the subcutaneous injection of circulatory stimulants such as Nikethamide (Coramine) or Leptazol (Cardiazol) every four to six hours. Digitalis is only required for cases with disorder of cardiac rhythm, i.e. auricular fibrillation.

As a rule it is wiser to avoid routine hypodermic injections at regular intervals, for in the first place the cardiac mechanism may be over stimulated, and secondly the patient may anticipate them with dread.

Venesection is occasionally indicated. It reduces toxæmia and relieves venous congestion. Its value is most marked in the early stages in a plethoric patient with a full bounding pulse and marked cyanosis, or later when the signs of right sided heart failure are present.

The value of alcohol in pneumonia is much debated. It should certainly not be used as a routine in every case, and care should be taken to employ it only for some specific purpose, i.e.

(a) It is an easily oxidized foodstuff and therefore of value if the patient is not taking other nourishment well.

(b) It is often a valuable soporific and may be effective in calming restlessness

(c) It should be continued in patients accustomed to taking it regularly

(d) It is of more value in young children and in elderly patients than in robust adults

It should not be regarded as a cardiac stimulant. If given, 3 to 4 oz in 24 hours is an adequate dose

SPECIFIC AND SPECIAL METHODS OF TREATMENT

1 *Sulphapyridine* At the present time the routine treatment of all cases of pneumonia is the administration of this drug although it cannot be claimed that it is universally successful. Sulphathiazole or Sulphadiazine may also be employed

The following adult dosage is recommended (Page 300)

(a) The immediate oral administration of 2 grams (4 tablets)

(b) $1\frac{1}{2}$ gram four hourly until the temperature has been normal for 24 hours, when the dose may be given three times a day

(c) After a day or two one tablet may be given three times a day for a further three days. If the drug is withdrawn too soon a recurrence of pyrexia may follow

2 *Felton's Serum* It is difficult to assess the value of this serum in the light of experience obtained with Sulphapyridine. It is certainly more costly but has its value in lowering the mortality and in shortening the duration of symptoms in pneumonia due to *Pneumococcus* Types I and II. The maximum benefit is obtained when the serum is commenced within three days and is practically without effect after the fifth day. The economical use of serum demands that preliminary typing be performed although about 50% of cases belong to Types I and II.

There is no reason why this form of treatment should not be combined with Sulphapyridine administration in especially severe cases

METHOD The serum must be given intravenously, without dilution at intervals of 8 to 12 hours (An interval of 6 hours only between the first two doses may be advisable in serious cases) Three or four doses (each dose = 20,000 units) are usually sufficient, but as much as 120,000 units may be required especially in Type II and late Type I cases.

Desensitization is unnecessary except in cases which have previously had serum and in asthmatics, but Adrenalin should always be at hand during the administration, 1 c c being injected subcutaneously if any symptoms of shock appear

In those who are susceptible, 1 c c of serum should be given intravenously and followed by the remainder 30 minutes later

CONVALESCENCE

Radiography shows that 21 days is the average time required for resolution to take place and the majority of cases should remain in bed for this period or longer if progress is not satisfactory or cardiac failure has occurred If there is any suspicion that resolution is delayed, an X ray of the chest is advisable before the patient is finally discharged Tonics are usually given when the febrile stage is over Iron is necessary if there is any suspicion of *anæmia following sulphapyridine*, and breathing exercises which help the full expansion of the lung should not be neglected

COMPLICATIONS

Eg Pleurisy, Empyema, Pericarditis, Acute Dilatation of the Stomach see separate headings

PNEUMONIA, BRONCHIO- (adult)

Broncho pneumonia in the adult is usually the result of extension of bronchitis or is secondary to some other condition

The general management of the case is similar to that of lobar pneumonia and acute bronchitis The patient should

be nursed in a well ventilated room at a temperature of 65° F

Expectorant mixtures are generally indicated in the early stages e g

Ammon. Carb	gr 3 to 5
Tinct Ipecac	m 10
Tinct Scilla	m 15
Infus. Senegae	ad 1 oz every 4 hours

Inhalations of Tinct Benzoin Co may also be given three times a day if secretion is scanty. A linctus is required for a troublesome cough. Dover's Powder is useful for insomnia in the early stages but Morphia should be avoided. Oxygen should be given early for cyanosis.

Injections of Nikethamide (Coramine) Leptazol (Cardiazol) Strychnine or Camphor in oil are useful for cardiac weakness or respiratory failure.

Convalescence is generally slow and tonics are indicated.

PNEUMOTHORAX, SPONTANEOUS

The onset of a spontaneous pneumothorax may be very acute, with collapse severe dyspnoea and cyanosis or the symptoms may be latent and the condition only discovered on routine examination. The latter form rarely requires any active treatment.

For the acute condition three therapeutic procedures may be mentioned.

1 For collapse give an injection of Nikethamide (Coramine) Leptazol (Cardiazol) or Strychnine. Alternatively, Brandy or a stimulating mixture of Ammonia and Ether may be used.

2 Give Morphia $\frac{1}{4}$ to $\frac{1}{2}$ gram to allay restlessness and to relieve pain.

3 If dyspnoea becomes urgent with marked cyanosis and cardiac embarrassment indicating great increase in the intra thoracic pressure and cardiac displacement a fine trocar and cannula (or ordinary intravenous needle of

suitable hole) should be introduced into the chest in order to allow some of the air to escape. Preliminary anaesthetization with Procaine is preferable but not essential in a grave emergency. The use of an artificial pneumothorax apparatus is ideal since the pressure readings and amount of air removed can be gauged.

In cases in which there is a valvular opening resulting in a persistent high pressure pneumothorax, it may be advisable to connect the needle to a "negative pressure bottle," the negative pressure being maintained by suction with a Potain's pump, the reverse end of a Higginson syringe or a Sprengel's pump, or a self retaining cannula with a valve (Zachary Cope) may be of value.

Sometimes it is considered advisable to attempt to produce an obliterative pleurisy by injecting Gomenol in Olive Oil into the plural cavity, e.g.

2 cc of 2%	Gomenol
5 cc of 5%	"
10 cc of 10%	"
20 cc of 20%	"

at intervals of a day or two

POISONING, TREATMENT OF¹

The majority of cases of poisoning are best treated in hospital, but in view of the importance of removing the toxic substance from the body as soon as possible, much valuable time will be saved if the practitioner is able to commence treatment at once.

Aims of Treatment

- 1 To remove the poison from the body
- 2 To treat dangerous symptoms
- 3 To neutralize the poison by giving an antidote which renders it inert

¹ This account is based partly on notes made from *The Treatment of Acute Poisoning* Marriott, H. L., 1935 (John Murray). I am grateful to Dr. Marriott for his permission to use them.

Inhaled Poisons (Coal gas, Sewer gas, Acetylene).

The object of treatment is to remove the residual gas from the lungs and to maintain respiration

- (a) Make sure that the natural air ways are clear
- (b) Commence artificial respiration at once and maintain it until spontaneous breathing is fully re-established
- (c) Administer Oxygen with 7% Carbon Dioxide (the latter being a most powerful stimulant to the respiratory centre)

Ingested Poisons

Except in poisoning by the strong corrosive acids and alkalis, the poison remaining in the stomach must be removed

- (i) By gastric lavage after passing the stomach tube
The stomach should be washed out with not less than 2 gallons of water, containing, if possible, the appropriate antidote—*vide infra*

or

- (ii) By the administration of an emetic (only if the stomach tube is not available)

N B—The stomach should always be washed out even if the patient has vomited after taking the poison

Injected Poisons

These can only be treated by the administration of a symptomatic antidote

SYMPTOMATIC TREATMENT**I Asphyxia (Prevention and treatment)**

- (a) The tongue must be prevented from falling back
The patient should be placed on his face with the head turned to one side, preferably on an inclined plane with the feet raised. This has the advantage that fluids are able to gravitate from the mouth and that this is the position in which gastric lavage should be performed. It is also the ideal position for artificial respiration

- (b) Administer Oxygen and CO₂ 7%

This is necessary not only in asphyxia from an obstructed

should be dissolved in 2 gallons of water to obtain the correct dilution

<i>Poison</i>	<i>Antidote</i>	<i>Grams</i>
Antimony	Tannic Acid, gr 180	12 0
Arsenic	Ferric Hydroxide This may be prepared in the following way Add Sodium Carbonate (washing soda) to 2 oz of 14q Fern Perchlor until effervescence ceases Filter and use the precipitated Ferric Hydroxide Muslin or a handkerchief may be used as a filter	
Atropine	Potassium Permanganate gr 60	4-0
Barium salts	Magnesium Sulphate, oz 2 .	60-0
Cocaine	Potass Permanganate, gr 60	4-0
Cyanides	ditto	
Iodine	Thin Starch paste (Arrowroot gruel or the white of an egg are also useful)	
Lead salts	Magnesium Sulphate oz 2	60 0
Mercury	Sodium Formaldehyde Sulphoxalate	120-0
Opium	Potassium Permanganate, gr 60	4-0
Oxalic Acid	Magnesia (Mag Oxide), oz. 4	120-0
Phenol (Lysol)	Mag Sulphate oz 2 The contents of a 12 to 16-oz bottle of Mist Alba form a convenient substitute	
Phosphorus	Copper Sulphate, gr 15 (Hydrogen Peroxide and Potassium Permanganate are also useful.)	1-0
Silver Nitrate	Common salt, oz 2	60-0

Emetics

These should only be employed when a stomach tube is not available The most certain in action is Apomorphine, $\frac{1}{16}$ grain by hypodermic injection Others which may be given by mouth include Zinc Sulphate, Ammonium Carbonate, Pulv Ipecac The dose of each being 30 grains

A tablespoonful of salt or mustard in half a tumbler of warm water swallowed quickly is also effective

TREATMENT OF CORROSIVE POISONING

(a) *Acids* (Hydrochloric, Nitric, Sulphuric)

The stomach tube and emetics should not be used

Given in 1 pint of water Magnesia (4 tablespoonfuls) chalk, soap suds, white wash, ceiling plaster, washing soda These may be followed by milk, Olive Oil or the white of an egg (The stomach tube may be used for Oxalic and Carbolic Acids or Lysol)

(b) *Alkalis* (Caustic Soda or Potash, Ammonia)

The stomach tube and emetics should not be used

Give vinegar, oz 3 or the juice of 6 lemons, Citric or Tartaric Acids

BARBITURATE POISONING

1 Stomach lavage, repeated two or three times at intervals of 4 to 6 hours

2 Colon lavage at the same time, repeated two or three times at intervals of 12 hours

3 In comatose cases give food by stomach tube, e.g. Coffee, Glucose, peptonized milk.

4 Rectal salines with Glucose may be given

5 Repeated injections of Strychnine, $\frac{3}{16}$ grain Nikethamide (Coramine), Icoral or similar drugs may be used

6 Lumbar or cisternal puncture repeated at intervals of 12 to 24 hours depending on the severity of the case

The most recent drug introduced for the treatment of this condition is Picrotoxin, 1 c.c. of 1 in 1,000 solution (gr $\frac{1}{16}$ approx) injected intravenously every few minutes until there is improvement in respiration pulse and blood pressure, and the pupillary and corneal reflexes return. The injection should be stopped if twitchings occur. An overdosage of Picrotoxin may be counteracted by a small dose of Evipan or Pentothal.

Hydrocyanic Gas Poisoning

1 Remove patient to the open air

2 Apply artificial respiration and give oxygen and CO₂

3 Inject Lobeline, gr $\frac{1}{16}$ If this is not available, Atropine, Strychnine or Caffeine may be tried

4 Give strong coffee when able to swallow

Lead Poisoning

The acute toxic phases may give rise to lead colic palsy or encephalopathy associated with secondary anaemia punctate basophilia and the characteristic blue line on the gums

In this stage a high Calcium diet should be given. Large quantities of milk will supply extra Calcium and Calcium Lactate may be given by mouth or Calcium Gluconate by intramuscular injection. This procedure favours storage and fixation of lead in the tissues.

In lead colic pain may be relieved by the intravenous injection of 15 cc of 5% Calcium Gluconate given slowly (*e.g.* five minutes).

Subsequently an attempt may be made to eliminate lead from the system by giving a low calcium diet (100 mgm daily) supplemented by Ammonium Chloride 1 gram in capsules or a glass of water six times a day.

Too rapid excretion of lead may result in reappearance of toxic symptoms when a high calcium diet should be substituted for a period.

POLIOMYELITIS, ACUTE ANTERIOR (Infantile paralysis)

ACUTE STAGES

1 *General Management* The patient should be confined to bed even in the mildest cases for a period of 3 to 4 weeks. If pain be marked an air or water bed may be necessary. Recumbency is only necessary if the spinal muscles are affected; other cases may be propped up. The bowels should be kept open and the bladder carefully watched for retention of urine. While pyrexia lasts a fluid diet is required.

2 *Relief of Pain* Aspirin Sodium Salicylate or Veganin may be given. If very severe Morphine or Nephenthe in doses suitable for the age of the patient may be required.

3 The following mixture containing Hexamine may be given but its value is unproven.

R. Hexamini	gr 10
Potassii Citratis	gr 20
Sodii Bicarbonatis	gr 20
Aq. Chloroformi	ad 1 oz t.d.s

4 *Lumbar Puncture* This should be carried out daily for the first 4 or 5 days

5 *Postural Treatment* The maintenance of paralysed parts in the correct position in order to prevent subsequent deformities is one of the most important points in the management of the condition. All paralysed muscles must be kept in a position of relaxation, otherwise they will become overstretched, and result in much delay in the rate and degree of recovery.

Appropriate postures can sometimes be obtained by the use of pillows or sandbags, but in the majority of instances a suitable splint is more efficacious. Light celluloid or poroplastic splints are especially useful. A light removable plaster may also be employed. It is just as important to prevent the overstretching of weakened muscles as those which are completely paralysed. (Discussion of the Kenny method is outside the scope of this work.)

6 *Special Types* In those cases in which the brain stem is affected the foot of the bed should be raised in order to allow secretions to drain from the mouth. Atropine may be given every 4 hours. When the respiratory muscles are paralysed the patient may be propped up and Atropine administered in order to check bronchial secretion. In severe cases, a Drinker's or some other form of artificial respirator is necessary and may be required for several weeks or even months.

7 *Convalescent Serum* The supply and demand for this form of treatment is almost confined to epidemics. In order to have any marked effect it must be given in the pre-paralytic stage of the disease which is hardly likely to be recognized in sporadic cases. It may be given intravenously or intramuscularly, although some authorities prefer the intra-thecal route by which 10 to 20 c.c. may be injected.

8 There is some evidence that Sulphapyridine has met

with success if given in the early stages. It may be combined with convalescent serum.

RECOVERY STAGE

This may be considered to have commenced when the pyrexia has subsided and there is no longer any spontaneous muscular pain or local tenderness e.g. 10 to 21 days. It may continue for many months.

1 Posture. This must be maintained by the continued use of splints to support paralysed or weakened muscles.

2 Massage and passive movements may now be commenced and followed by active movements and re-educative exercises as soon as the patient is able to perform any voluntary movement.

3 Later, electrical stimulation and the employment of mechanical devices to aid re-education, e.g. a walking machine, local brine baths or salt water bathing may be considered. The salt water affords considerable support to weakened muscles and enables movements to be carried out which would otherwise be impossible.

4 The general health should receive attention. Strychnine being especially valuable.

5 Circulation in the affected extremities may be sluggish and the parts tend to become blue and cold. Extra stockings or woollen gloves should be provided.

LATE STAGES

Orthopaedic measures may be required such as tenotomies, muscle transplantation, and special mechanical appliances.

PROPHYLAXIS

Mouth washes and nasal sprays may be used by contacts. With regard to outbreaks occurring in boarding-schools it is difficult to be dogmatic, but the safest procedure would appear to be to close the school and to segregate the children in their own homes for at least 2 weeks. Great care must be taken that during this period they are completely isolated from other children. The same rules should apply to the staff who might also act as carriers.

POLYCYTHÆMIA (Osler's disease, Vaquez's disease, Erythræmia)

This account refers to the primary type of disease often associated with splenomegaly, high blood pressure and occasionally enlargement of the liver. No special measures are required when polycythæmia is secondary to conditions such as congenital morbus cordis.

The remedies must be regarded as palliative and temporary in their effects.

(1) Venesection at regular intervals

(2) Phenylhydrazine. This drug, which has a direct effect on the production of red cells, must be used with caution and its administration controlled by repeated red and white cell counts. The drug should be stopped (1) before the red cells fall below five and a half million, (2) if there is a marked rise in the white cells indicating damage to the liver, or (3) if estimations of the blood bilirubin show a considerable increase. It should not be used in patients over sixty, nor in those having marked arterio-sclerosis, renal or hepatic disease, myocardial degeneration or a tendency to thrombosis. The average course of treatment consists of 0.1 gram ($1\frac{1}{2}$ grains) in capsules three times a day for 12 days making a total of 3.6 grams.

(3) Applications of X rays to the long bones has been used with success.

(4) Liver, kidney and pancreas should be entirely excluded from the diet and the intake of red meat drastically reduced.

PRIAPISM

In less severe cases Potassium Bromide, 30 grains at night may be effective. Others may be controlled by packing a little cotton wool under the foreskin and moistening it with a few drops of 10% Cocaine from a pen filler when the symptom appears.

In more severe instances deflation of the corpora cavernosa by means of a needle and syringe with repeated

injection and aspiration of a small amount of normal saline has been recommended. This may be repeated when required.

PROCTALGIA FUGAX

The bowels should be regulated. Belladonna, Pheno-barbitone or Codeine may give relief.

PROGRESSIVE MUSCULAR ATROPHY (Motor Neurone Disease)

A Wassermann reaction should be carried out in every case for in some instances syphilis may be a causal factor and appropriate treatment may diminish the progress of the disease.

Apart from this nothing is known which will influence it and the only therapeutic measures which can be employed are for the relief of symptoms. Hyoscine or Belladonna may be of value for salivation and sphincter trouble. Massage is comforting and suggests to the patient that something is being done for him.

PRURITUS ANI

This is a very troublesome condition for which many therapeutic measures have been recommended.

1 In the first place a thorough search must be made for any cause e.g. Piles, proctitis, anal fissure, a vaginal discharge, diabetes, worms, renal or hepatic disease. Any such condition must receive attention.

2 The bowels should be kept comfortably open with salines or Liquid Paraffin. Irritating foods such as curries, coffee and excess of alcohol should be avoided. The surrounding parts should be washed with cold water, mild alkaline or weak antiseptic lotions and carefully dried.

3 Any of the following *local applications* may be tried

(a) Powders e.g. Bismuth Carbonate Zinc Oxide Calamine or Orthocaine which may be dusted over the part

(b) Lotions e.g. Lotio Plumbi Glycothymolene diluted with an equal quantity of water or

R. Liq. Hamamelidis	oz	$\frac{1}{2}$
Lotio Acid. Borici	oz	$\frac{1}{2}$
Liq. Calcis	dr	2
Glycerini	dr	2
Aq. Camphorae	ad	6 oz

After the application of the lotion a dusting powder such as one of those previously suggested or equal parts of Calamine and Starch may be used

If there is no excoriation of the skin the following alcoholic solution may give relief

R. Tinct. Benzoin Co	dr	1
Spt. Vini Rect	oz	1

(c) Ointments e.g.

(1) R. Tinct. Benzoin Co	dr	2
Lanolini	ad	1 oz

or (2) R. Hydrarg. Subchlor	dr	2
Bismuth Subnit	dr	$1\frac{1}{2}$
Tinct. Aconiti	m	7
Glycerini	dr	2
Unguent. Sambuci	ad	1 oz.

Although ointments give considerable relief the application of lotions followed by drying powders helps local inflammation to clear up more quickly. A sedative such as Chloral and Bromide or Soluble Barbitone (Medinal) may be required at night. A piece of lint soaked in Liq. Calcis Chlor the end of which is inserted just inside the anus may also give relief at night.

4 The application of a pastille dose of X-rays may be considered in chronic cases but this procedure is not without some risk of producing a burn.

5 Recently good results have been reported from the

injection of a local anæsthetic of low toxicity dissolved in oil in order to produce delayed absorption and consequently more prolonged action e.g. Proctocaine (Allen & Hanbury's) 20 to 30 c.c. are injected around the anus

6 For intractable cases Ball's operation which consists of cutting skin flaps around the anus in order to divide the cutaneous nerves and the suturing the flaps back in position gives satisfactory results

PSORIASIS

In the absence of a known ætiology treatment is confined to efforts to remove the eruption by local measures and the internal administration of drugs which appear to have a beneficial effect on the condition

1 *Acute Stages* The patient should be confined to bed. Daily alkaline baths are often useful and simple applications such as plain Vaseline followed later by 1 to 1% Salicylic Acid in Olive Oil. During this period Sodium Salicylate should be given by mouth e.g.

R. Soda Salicyl	gr 20
Soda Bicarb	gr 20
Potass Cit	gr 30
Syrup Auranti	dr ½
Aq Chloroform	ad 1 oz t.i.d.

2 Later when irritation has subsided and the lesion has ceased to spread one of the following may be tried

R. Sulph Præcip	gr 5
Acid Salicyl	gr 5
Adeps Benzoiati	ad 1 oz

Misce ft ungt

This ointment should be continued until improvement ceases its strength should then be doubled and finally trebled

Alternatively, a Coal Tar paste may be employed

R. Picis Carb	gr 5
Zinci Oxidi	dr 1
Paraff Moll	ad 1 oz

3 In the *chronic stages*, Chrysarobin is a useful preparation which, however, has certain disadvantages especially its action in staining linen permanently. Old underclothes and bed linen should therefore be used during the period of treatment, and it is often wise to confine the patient to bed for a few days. Chrysarobin ointment (5%) should be applied after a bath and renewed twice daily. In addition to rubbing the preparation well into the affected areas some should be spread on linen and retained in position by bandages. After about 10 days, there is usually some redness and irritation of the skin the strength of the ointment should then be reduced to 2% for a few days. The residual dermatitis may be treated with a Zinc paste, e.g. Pasta Zinci Co (Lassar) and the course of treatment followed up by applications of Coal Tar Ointment.

Chrysarobin must never be applied to the head or face and a gauze mask may be necessary at night in order to prevent the patient conveying it from other parts.

4 Lesions of the scalp are frequently present and must be treated at the same time as the rest of the body. The head should be washed daily with spirit soap in order to remove the scales. An ointment containing Resorcin 30 grains to the ounce e.g. Ungt Resorcin B.P.C. (half strength). A similar ointment containing 10 grains to the ounce may be used for the face.

5 A course of Liquor Arsenicalis may be given by mouth but is liable to cause subsequent pigmentation in the affected areas.

6 Thyroid given in increasing doses until a mild degree of hyperthyroidism is first produced is said to be beneficial in some cases.

7 Protein shock therapy, e.g. whole blood injections or intravenous T.A.B. vaccine has been tried.

8 Bi weekly ultra violet light combined with 500 000 units of Vitamin D daily is said to be useful in some cases especially those with arthritis.

9 Sometimes a change in diet is beneficial. Certain articles such as eggs, meat or starchy foods should be

omitted in turn for periods in order to observe if any benefit results

10 Localized patches often clear up with applications of X rays but this form of treatment is not suitable if the disease is extensive

11 Some cases appear to improve with Spa treatment the alkaline and sulphur waters of Harrogate being especially beneficial

PTYALISM

There is generally some underlying cause for excessive salivary secretion such as local conditions in the mouth or œsophagus trigeminal neuralgia mercurialism iodism or dyspepsia The treatment in the first place is directed to the cause Symptomatic treatment consists of the administration of Tinct Belladonnæ 5 to 10 minims t.d.s. to which Pot Brom, 10 grains may be added if desired Potassium Chlorate mouth washes may be given

PULMONARY EMBOLISM

If the clot is a large one death may occur very rapidly In other cases some treatment can be carried out A small dose of Morphia may be necessary for pain but in many instances associated pulmonary œdema demands the injection of Atropine $\gamma\frac{1}{16}$ grain and caution in the use of Morphia Inhalations of Oxygen are required for cyanosis and injections of Strychnine Nikethamide (Coramine) or Leptazol (Cardiazol) may be necessary if the pulse becomes weak If recovery ensues the patient should be kept in bed for at least 6 weeks

In rare instances it has been possible to remove a clot successfully from the pulmonary artery by operative means

PULMONARY ŒDEMA (Acute)

The prompt injection of Morphia gr $\frac{1}{16}$ with Atropine gr $\gamma\frac{1}{16}$ followed if the patient is cyanosed by venesection and the administration of Oxygen is necessary

PURPURA

1. *Purpura simplex*. This more or less benign condition which is probably due to alteration in the capillary permeability as a result of some unknown toxæmia, requires rest in bed until the tendency to relapse has ceased, fresh air, good food together with iron and arsenic:

R. Ferri et Ammon. Cit.	gr. 20
Liq. Arsenicalis	m. 2
Aq. Menth. Pip.	ad 1 oz. t.d.s.

Alimentary antiseptics may be tried, e.g. Salol., Hyd. cum Cret., Oil of Turpentine (10 minims every 4 hours).

2. *Purpura hæmorrhagica (Essential thrombocytopenia)*. In this condition there may be severe constitutional disturbances and, in addition, hæmorrhage from the mucous membranes. In the acute stages, injections of whole blood or normal horse serum should be given. In desperate cases, repeated transfusion may be necessary. Adrenalin should be applied to bleeding mucous membranes. Recently, snake venom has been advocated as a local application. In chronic cases (with low platelet count) splenectomy or ligation of the splenic artery has successful results. As a general rule, however, one or more blood transfusions should be tried before operative measures are carried out, and pre-operative transfusion should always be given. Anæmia should be treated with Iron.

Other methods which have been tried include applications of X-rays to the spleen and the intravenous injection of Ascorbic Acid, 100-300 milligrams, every one to three days. Varying results have been obtained, but in every case treatment should be controlled by repeated platelet counts.

For the type following injections of N.A.B. or Gold, blood transfusion is recommended and Vitamin P (Hesperidin, Glaxo) in doses of 0.25 gram every two hours for several days has been tried.

The following investigations should be made in a case of suspected essential thrombocytopenia

1 Platelet count (diminished)

2 Bleeding time (prolonged)

3 Coagulation time (normal)

3 *Henoch's purpura* When intestinal obstruction and intussusception have been excluded Opium may be given in suitable doses and colon lavage carried out if desired

4 *Symptomatic or secondary Purpura*, such as may occur in acute specific fevers septicæmia cachectic conditions blood diseases etc requires symptomatic treatment Whole blood horse serum or Calcium Gluconate injections may be tried in severe cases

PYELITIS, ACUTE

1 Simple Routine Measures

(a) In the acute stages the patient must be confined to bed and should be nursed between blankets

(b) A light diet consisting of milk fruit juice custard jelly bread and butter and later fish chicken and vegetables should be taken Copious fluids e.g. 5 to 8 pints including barley water lemonade and weak tea should be administered

(c) The bowels should be kept freely open

(d) While pyrexia is present the urine should be rendered and kept alkaline It is important to see that this state is maintained throughout the 24 hours The following mixture may be given at first two hourly and later three or four hourly

R Potass Citratus gr 30 to 60

Aq Chloroformi

or Aq Menth P p ad 1 oz

2 The majority of cases of acute B. Coli pyelitis respond to treatment with Sulphanilamide or Sulphapyridine which should be given in full doses for 5 to 6 days A catheter specimen of urine should then be cultured

Sulphonamide drugs will act in alkaline urine, so that Potassium Citrate may be given at the same time

3 *Mandelic Acid* Cases which do not respond to Sulphonamide therapy may be treated with Mandelic Acid. The course of treatment is more complicated and lasts longer, the urine not becoming sterile for 10 to 21 days

Either the Sodium, Ammonium or Calcium salt of Mandelic Acid is employed, the adult dose being up to 4 grams four times a day immediately after each meal. This dose may be dispensed in 1 oz of water flavoured with lemon. The urine must be rendered slightly acid by giving Ammonium Chloride, commencing with a dose of 1 gram (15 gr) four times a day. The dosage must be increased if the urine does not become sufficiently acid.

It may be obtained in capsules or given as a mixture.

B. Ammon Chlor	gr 15
Syr Limonis	dr 1
Extr Glycyrrhiz Liq	dr 1
Aq ad 1 oz	

Calcium Mandelate is probably less unpleasant than the others and less liable to produce gastric irritation. However, it is not miscible with water, and is, therefore, best given as a powder or special preparation, e.g. Mandecal (B D H)

The acidity of the urine must be estimated by using a suitable indicator. It should have a pH of less than 5.5

(a) Add a few drops of methyl red to the urine, the colour produced should be orange indicating a pH of about 5.3. A full pink indicates excessive acidity.

or (b) "Universal Indicator" (B D H) which is green, should turn to yellow but should not reach orange.

Suitable outfits containing a colour standard can be obtained.

During the course of treatment the fluid intake should be limited to 2 pints daily.

In B. Coli pyelitis the urine usually becomes sterile within 10 to 21 days.

Specially prepared Elixirs of Ammonium Mandelate are also available, and are a convenient method of carrying

out this form of treatment, but unless careful control of the urinary pH is kept, results may be unsuccessful

4 As an alternative to Sulphonamide or Mandelic Acid therapy the following older method may be used —

After the temperature has become normal for some days with the administration of alkali Hexamine may be given when the urine has again been rendered acid

To make the urine acid give

R. Acid Sodn Phosph.	gr 30 to 40
Aq Menth. Pip	ad 1 oz tds, ac

or R. Acid Ammon Phosph.	gr 20
Syr Limonis	dr $\frac{1}{2}$
Aq ad 2 dr tds, ac	

When the urine becomes acid give separately and in addition

R. Hexamin	gr 10
Syr Auranti	m 30
Aq Chloroformi	ad 1 oz tds, pc

The following has the advantage that it can be administered as a single mixture which remains stable for a fortnight

R. Ammon. Chlorid.	gr 20
Hexamin	gr 10
Extr Glycyrrhiz Liq	m 20
Aq ad 2 dr tds	

Intravenous Hexamine Good results may be obtained in severe acute pyelitis by the intravenous injection of Hexamine (Urotropine Schering) 5 c.c. of a 40% solution once or twice daily until the temperature falls. The method is said to be less effective in chronic cases

5 The effect of drugs such as Hexyl resorcinol Caprokol Neotropin and Pyridium are variable. They should not therefore be employed in the first instance, but might be tried in resistant cases

PYELITIS, CHRONIC

(Associated abnormalities of the renal tract must be excluded)

1 A course of one of the Sulphonamide drugs may be tried

2 Mandelic Acid therapy which was evolved as a substitute for the Ketogenic diet (The latter is included here for reference purposes)

Ketogenic Diet This may be given for several weeks or until the urine has been sterile for a week if the patient will tolerate it. The urine should acquire a pH of 5.5

A diet of this nature for an adult would contain approximately

Carbohydrate	30 grams
Protein	50
Fat	250

This may be made up in the following way: bacon 1½ oz cream 8 oz meat 1½ oz butter 3½ oz. In addition fruit orange juice vegetables and salad are allowed together with tea bran biscuits or Vita Wheat ½ oz of Olive Oil is taken three times a day the main point being that the ratio of fat to the combined total of protein and carbohydrate is 3:1

3 *Lavage of the Renal Pelvis* This may be carried out at seven day intervals in chronic cases which have failed to respond to other measures. After washing out the pelvis with sterile saline through a ureteric catheter 4 to 5 c.c. of 5% Collodial Silver or 1% Silver Nitrate are instilled

4 There are a number of well known proprietary preparations which may be tried including Neotropine Pyridium and Cystopurin

5 *B. Coli Vaccines* preferably autogenous may be tried. The dosage and rate of increase must depend on the individual case and any reaction produced. Five million organisms may be given as an initial dose and increased at weekly intervals up to 500 million.

The control of a case of pyelitis requires bacteriological

examination of a catheter specimen of urine from time to time and careful observation of its reaction. For the latter purpose it would appear that the future tendency will be to obtain an accurate estimate of its pH by the use of some type of universal indicator rather than by litmus.

PYLORIC STENOSIS

The treatment of organic pyloric obstruction is operative, a gastro enterostomy usually being the procedure of choice. As a pre operative measure, and in those cases in which for some reason or other operation is contra indicated or impossible, daily gastric lavage with warm water or normal saline should be carried out. The diet should consist of small feeds of custard, junket, beaten up eggs and milk. Small amounts of fluid only should be given by mouth, rectal salines being administered instead.

In cases of partial obstruction associated with an acute ulcer medical treatment should be given for the ulcer for 3 weeks before operative measures are contemplated, in order to allow spasm and inflammatory swelling to subside. In many such instances the obstruction disappears.

The condition of "gastric uræmia" is sometimes associated with pyloric stenosis. In addition to nitrogen retention, alkalosis and chloride deficiency may be present. The treatment consists of withdrawing all alkalis, washing out the stomach and giving rectal salines. If operation is contemplated in those cases with a high blood urea continuous intravenous salines should be given. It is therefore wise to estimate the blood urea in all cases of pyloric stenosis.

PYLORIC STENOSIS, CONGENITAL HYPERTROPHIC

Important decisions often have to be made in connection with the treatment of this condition. Early diagnosis and the distinction between pylorospasm and established pyloric hypertrophy, in which in most instances a tumour can be felt, are important. X ray examination after a

small barium meal is often of value in determining this point. The rate of emptying may indicate whether medical or surgical treatment is appropriate. The following may be taken as a rough guide —

1 If no barium has entered the intestine after eight hours, operation is indicated.

2 If half the stomach contents have been emptied in eight hours operation will possibly be necessary.

3 Other cases, especially if strong peristalsis is seen, are likely to be suitable for medical treatment.

1 MEDICAL TREATMENT

There is a tendency to spontaneous recovery in hypertrophic pyloric stenosis, provided death does not occur from inanition in the meantime. Medical treatment may, therefore, be tried in mild or early cases provided rapid improvement takes place, the vomiting ceases and the weight begins to rise. Under no circumstances, however, should surgical treatment be delayed until the condition of the infant has deteriorated so much that the risks of the operation are unduly increased.

The medical treatment consists of once or twice daily gastric lavage with warm water or normal saline (alkalis should be avoided) and regulation of the feeding. Breast milk, if available, is the ideal food. Alternatively, (1) Dilute peptonized milk, 1 to 2 oz every 2 to 3 hours, (2) Skimmed lactic acid milk with 1 oz Dextrimaltose or (3) Thickened cereal feeding with a paste made according to the following formula (Sauer)

<i>Farina or rice flour</i>	3 tablespoonsful
Skimmed milk	9 oz
Dextrimaltose	3 tablespoonsful
Water	12 oz

This must be boiled for 1 hour in a covered saucepan until a paste-like consistency has been obtained. The feeds of 2 to 6 tablespoonfuls, depending on the age of the infant, are given every 4 hours. Additional fluids must be given in the form of rectal or subcutaneous salines.

The most successful medical results are obtained with a

drug allied to Atropine viz Eumydrin (Atropine methyl nitrate) The average dose is 2.5 c.c. of 1 in 10 000 aqueous solution which is made up freshly each week and given half an hour before each feed (3 to 4 c.c. may be required) It may be necessary to continue the drug for some weeks (e.g. six to twelve) and salines should be given while there is any evidence of dehydration. It may also be necessary to continue with gastric lavage. In the later stages of treatment, a reduction in the dose may be possible.

If vomiting is severe some of the drug is liable to be lost in the vomit. One drop of 0.6% Alcoholic Solution given on the tongue before feeds is said to be rapidly absorbed. The potency of this solution, however, is such that it is only suitable for hospital use.

Lamellæ containing $\frac{1}{16}$ gr. placed under the tongue 15 minutes before each feed, are the most suitable means of giving this drug (Lamellæ Pylostropin).

Toxic symptoms such as pyrexia and abdominal distension are an indication of omitting at least one dose of the drug.

Small doses of Atropine 15 minutes before feeds have been recommended. Commencing with 1 minim of a 1 in 1000 solution the dose is gradually increased 1 minim at a time until an erythema of the skin appears. It must then be reduced a little and continued for some weeks.

2 SURGICAL TREATMENT

Pre operative gastric lavage should be carried out if possible for 2 or 3 days. Dehydration must be counteracted by rectal subcutaneous or intra peritoneal salines. Rammstedt's operation is generally employed using open ether or local anaesthesia. Hourly feeds should then be given for the first 12 hours, commencing with 1 drachm doses and, after the first six have been given increasing a drachm at each feed. During the next 24 hours two-hourly feeds should be given increasing at the same rate. Breast milk or a milk mixture, both diluted with an equal amount of water may be used. If desired the feeds consisting of 1 dr. of 7.5% glucose in half strength normal saline may

be given every half hour, commencing three to four hours after the operation for a period of three hours before milk is employed

RECTUM, PROLAPSE OF (Procidentia)

This is more common in children than in adults and usually follows defæcation. The child should be placed across the knees (an adult should lie on the left side) and an attempt made as soon as possible to replace the mucous membrane after ascertaining by rectal examination that the condition is not an intussusception.

Gentle pressure with a small towel wrung out of ice-cold water may make subsequent reduction easier. The prolapse should then be smeared with Olive Oil and firm pressure applied to it with the hand, attempting to return first the apex which is the last portion to be protruded.

In severe cases, an anæsthetic may be required in order to stretch the sphincters. Subsequently, the buttocks may be approximated by a wide piece of strapping or the thighs bandaged together, straining at stool reduced by the use of Liquid Paraffin or a mild laxative, and the motions passed in a recumbent attitude rather than squatting in the usual position which favours a recurrence.

If a cure is not obtained by these measures, operative procedures must be considered, the simplest of which is light linear cauterization of the rectal mucosa with the point of the Paquelin canterry at dull red heat under general anæsthesia.

Weekly perirectal injections of 5 c c Sylnasol with the object of producing local fibrosis have been suggested.

RENAL CALCULUS

1 *Acute Renal Colic.* Inject Morphine, $\frac{1}{8}$ to $\frac{1}{4}$ grain, with Atropine, $\frac{1}{100}$ grain, for the relief of pain. The antispasmodic effect of Atropine may be continued by the administration of Tinct. Belladonnæ, 10 minims, in an ounce of water every 4 hours for several doses. Trasentin (Ciba), an antispasmodic drug, is said to be especially useful in renal colic, having effect 10 to 15 minutes after the intra-

muscular injection of $\frac{1}{2}$ to 1 ampoule. Tablets for oral administration and suppositories are also available. The intravenous injection of 15 c.c. of 5% Calcium Gluconate given slowly (5 minutes) may be tried. In very severe attacks inhalations of Chloroform may be required until the Morphia has had time to act. Fomentations or Antiphlogistine may be applied to the loin and copious drinks of hot lemonade given. A hot bath may also help to relieve the spasm. The patient should remain in bed while haematuria persists.

2 TREATMENT BETWEEN ATTACKS

This may be either medical or surgical. Except when a small ureteric calculus only is present operative measures must be contemplated since a stone may lead to hydro-nephrosis or some other form of permanent damage to the kidney. Medical treatment should also be continued after a stone has been removed with a view to preventing recurrence.

It is to be remembered that there are three common types of calculus viz. Oxalate, uric acid and phosphate. The first appears in acid, the last two in alkaline urine. The aim of treatment is therefore to keep the urine neutral and to avoid those substances in the diet which increase the excretion of oxalates and uric acid.

(a) *Diet* (see also Oxaluria page 239). A light easily digested diet should be taken. Excess of meat especially if rich in purins e.g. sweetbread, liver, is to be avoided. Rhubarb, spinach, strawberries and tomatoes contain oxalic acid and should not be taken.

(b) *Fluids*. Copious fluids should be taken regularly. In addition to ordinary water, Contrexeville (especially for uric acid stones and gravel), Evian (oxalate types), Vichy or Lathia water may be used with advantage.

A teacupful of whey, taken three times a day is useful especially when uric acid is present.

(c) *Drugs*. The aim of drug treatment is to produce neutrality of the urine and for this purpose either Potassium Citrate (when urine is acid) or Acid Sodium Phosphate

(when urine is alkaline) may be employed i.e. For oxaluria and uric acid gravel give Potassium Citrate For phosphaturia the following mixture is useful

R Hexamini	gr 10
Acid Soda Phosph	gr 20
Acid Nitro hydrochlor Dil.	m. 10
Infus Gentianae Co	ad 1 oz t.d.s

N B—The patient may test his own urine with litmus paper if desired

An attempt may sometimes be made to get rid of small stones by giving a mixture of Potassium Citrate 20 to 30 grains with Tincture of Belladonna 10 minims every 4 hours for several days and ensuring that not less than 6 pints of fluid are taken in the 24 hours

(See also Oxaluria page 239 Calculus Anuria page 24)

Small calculi situated at the lower end of the ureter can sometimes be induced to pass after the injection (repeated if necessary) of sterile Liquid Paraffin through a ureteric catheter

Investigation of a case of renal calculus may require X ray cystoscopy and pyelography either with ureteric catheterization or by the intravenous method.

RHEUMATISM, ACUTE (Rheumatic Fever)

The aims of treatment are twofold

- 1 To prevent or limit the extent of cardiac damage
- 2 To relieve fever and joint pains

The patient must be put to bed at once in the recumbent position with one pillow and should be kept there until it is certain that the heart is unaffected, a period of at least 5 weeks after the temperature is normal or if endocarditis develops until the inflammatory process has ceased to be active (3 to 6 months)

The patient should be nursed between blankets preferably in a long flannel nightgown or woollen pyjamas with sleeves to the wrists during the active stages of the disease when sweating is profuse The garment must be changed

if it becomes damp. Later, ordinary night attire may be permitted.

During the acute stages a fluid diet with milk (diluted or citrated if necessary) as a basis is given. This is gradually increased by the addition of oatmeal, eggs, custard, jelly and vegetable soups. Meat may be given sparingly during convalescence. When there is pyrexia and sweating, plenty of fluids, e.g. Imperial drink or lemonade, should be supplied.

The affected joints must be placed and supported in the most comfortable position. They may be wrapped in cotton-wool or Thermogene; or Methyl Salicylate Liniment may be applied on lint. A useful lotion is a hot saturated solution of Sodium Carbonate. Splints, sand-bags or pillows are useful in preventing painful movement, and the weight of the bed-clothes should be supported by a cradle.

Drugs.

The one drug which would appear to be indicated in all cases is Sodium Salicylate, for although it is doubtful whether it has any effect in preventing the onset of cardiac complications, it certainly produces rapid amelioration of the joint symptoms and fever if given in adequate doses. If there is no response within 48 hours reconsideration of the diagnosis is advisable.

An attempt should be made to distribute the doses evenly throughout the 24 hours, e.g. (for an adult in acute stages) give Soda Salicyl., 10 grains, every 2 hours (8 a.m. to 8 p.m.) with one or two doses during the night (90 grains in 24 hours, but as much as 200 grains a day may be required in some cases). Half this dose may be given to a child of ten to twelve.

Alternatively, Sodium Salicylate, 20 to 30 grains, may be given two-hourly for four or six doses and then continued as 20 grains every 4 hours.

After the subsidence of acute symptoms, 10 or 15 grains every 4 hours and finally three times a day may be sufficient.

The occurrence of headache, deafness, tinnitus, vomiting, general depression or delirium with an increase in temperature while the joint pains are subsiding indicate over-dosage.

It is customary to "cover" Salicylates with Sodium Bicarbonate in mixtures, but large doses of the latter are not necessary. A prescription may be made up on the following lines -

R. Sodii Salicyl	gr 10 to 30
Sodii Bicarb	gr 10 to 20
(Flavouring q s)	
Aq ad 1 oz.	

One of the following may be added as a flavouring agent
 (1) Syrup Zinziberis, dr $\frac{1}{2}$ (2) Syrup Aurant, dr $\frac{1}{2}$ (3) Extr Glycyrrhizæ Liq, m 10. It is often an advantage to alter the flavouring agent from time to time when the drug is given to children over long periods.

For excessive pain or sleeplessness, Dover's Powder or Nепenthe may be given.

For hyperpyrexia, cold packs or a tepid bath cooled to a temperature of 65° F after the patient has been immersed, may be employed. Stimulants may be required for collapse.

Convalescence

This must be slow, several days being taken in the transition from recumbency to sitting up in bed. Cardiac exercises are valuable if endocarditis has occurred. Tonics should be given.

It may be found convenient to arrange the progress of treatment and convalescence in the following stages -

- 1 Bed, one pillow and fed by nurse
- 2 Two pillows, patient feeds himself
- 3 Sitting up in bed permitted
- 4 Resting on couch, followed by dressing and visits to lavatory
- 5 Up half day, later all day with increasing amount of walking exercise

The transition from the second to the third stage should only be permitted when the activity of the disease has ceased. To some extent this may be estimated by the presence of a normal sleeping pulse rate and the return of the blood sedimentation rate to normal.

Tonsillectomy is often advised but should not be undertaken lightly and is certainly not indicated as a routine measure in every case. It does not in itself appear to prevent recurrence and should only be done if the tonsils can be condemned as infected and unhealthy on other grounds. An operation should not be performed until all evidence of acute tonsillitis and the attack of rheumatic fever have completely subsided.

SUBACUTE RHEUMATISM

The treatment of subacute rheumatism with its characteristic growing pains is one of considerable difficulty. Careful and repeated observation for the development of cardiac lesions is of utmost importance. It is unlikely that a prolonged period of rest in bed will be tolerated unless such lesions are demonstrated but confinement to bed together with the administration of Salicylates should be insisted on when pains are actually present.

The child should be forbidden to take part in active games and swimming and a period of convalescence is advisable especially if the home conditions are unsuitable.

The following tonic may be given.

R. Syrup Fern Phosph Co	} aa dr ½
Syrup Fern Iodod	
Syrup Calc Lactophosph	

Dose dr 1 to 3

Ostein may be added to this if desired

RICKETS

1 PREVENTION

Rickets tends to occur in bottle fed babies between the ages of four months and three years and its first manifestations are commonly observed in the spring. It is unlikely to develop in babies who are breast fed by well nourished mothers but when weaning takes place an adequate amount of cow's milk must be given in the diet which should also contain some animal fat in the form of butter. Excess of carbohydrate should be avoided.

Bottle fed infants should be given an adequate prophylactic dose of Vitamin D daily, e.g. Cod liver Oil 10 to 30 drops daily, Radiostoleum or Ostelin 5 to 10 drops daily

2 TREATMENT OF ACTIVE DISEASE

The essential point is to supply vitamin D. The official preparations are *Liquor Calciferolis* (2 000–3 000 units, i.e. 10 to 15 minims), *Liq Vitamin D Conc* (250–1500 units, i.e. $\frac{1}{2}$ to 3 minims)

Many others are available, e.g. *Radiostol* (B.D.H.) contains 3000 units per gram, *Radiostoleum* (B.D.H.) contains in addition Vitamin A, *Ostelin liquid* (Glaxo) contains 5000 units of Vitamin D per c.c., *Advita* contains 1000 units of D per gram

Care should be exercised not to exceed the therapeutic doses as there is a definite risk of producing hyper-vitaminosis with these powerful concentrates. The dose required is between 1200 and 3000 units per day

Diet The rickety child is prone to digestive disturbances so that alterations in the diet should be made cautiously. It should eventually be standardized to contain milk, butter, eggs and cream, but excess of starchy foods must be avoided

The following may be given as an aid to digestion

R. Pulv. Rhei	gr 1 to 2
Sodii Bicarb	gr 2
Syrup Zinzibaris	m 5
Aq. Menth. Pip	ad 1 dr t.d.s

Fresh air and sunshine are essential and arrangements should be made for the child to be out of doors for several hours every day. Artificial sunlight is a valuable adjunct to treatment but is not essential if sufficient Vitamin D is provided

The bowels should be regulated and a Grey Powder once a week is useful

Iron should be given if there is any associated anaemia, e.g. *Ferris et Ammon Cit*, 5 grains t.d.s

3 PREVENTION AND TREATMENT OF DEFORMITIES

With adequate doses of a potent preparation of Vitamin D, healing should take place in 9 to 12 weeks but it is wise to

obtain radiographic control of the process. While the disease is still active the child should be kept off its legs as far as possible and for this purpose light splints projecting beyond the feet may be applied during the day. For young children rolled up newspapers are useful in this connection. Massage is useful in improving the tone and nutrition of muscles.

Permanent deformities may be remedied later by operative or orthopaedic measures but some spontaneous improvement is to be expected in the course of a year or two before which no operative measures should be undertaken.

RINGWORM

TINEA CAPITIS

Treatment by X rays or Thallium Acetate are the only speedy methods of cure.

1 *X rays* Suitable doses given only by an expert produce fairly rapid epilation. The area treated remains bald for about 2 months but will be covered with short hairs after a further period of 2 months. The risk of producing permanent baldness with modern technique is slight but should always be explained to parents whose written consent to the treatment should be obtained.

2 *Thallium Acetate* Provided it is realized that this is a dangerous drug which must only be given in very accurate dosage this is a very useful method of treating ringworm.

Dose 8.5 milligrams per kilo body weight (naked)
i.e. 3.9 milligrams per lb.

A solution containing the correct dose is given in an equal quantity of milk and taken on an empty stomach. If the child vomits the dose should only be repeated if the hair fails to fall out after 4 weeks.

Thallium Acetate should not be given to children who are not in good general health nor to those who exceed 30 kilo (66 lb) in weight.

3 *Local Treatment* This is also necessary. The head should be washed daily and when the hairs begin to fall out the application of strapping to the affected area for a day

or two aids their removal. A suitable antiseptic ointment for application is

R Sulph Præcipit	dr	1
Hydrarg Ammon	dr	$\frac{1}{2}$
Lanolin	} aa	oz $\frac{1}{2}$
Vaselin		

RECIPE During acute inflammation, starch poultices may be applied night and morning. Later, when the swelling and tenderness have subsided Ungt Hydrarg Ammon Dil mixed with an equal amount of Ungt Zinci may be used and, finally, the Sulphur and Mercury ointment (see above), in case any fungus still survives.

Before stating that no evidence of the disease can be found, the head should be examined under a Wood's glass.

TINEA CORPORIS (CIRCINATA)

Wash twice daily with soap and water and apply one of the following

- 1 Tinct Iodi (may produce irritation if repeated frequently)
- 2 Ungt Iodi
- 3 Sulphur and Ammoniated Mercury ointment (see above)

TINEA CRURIS (DHOBIS ITCH)

- 1 Ungt Iodi
- 2 Ungt Chrysarobini for a few days in resistant cases

ROSACEA

In the early stages one of the following lotions may be tried

R Zinci Oxidi	dr	2
Calaminæ Præparatæ	dr	4
Spirit Vini Rect	oz	2
Aq Rosæ	ad	10 oz
Misce ft lotio		

or	R Sulph. Præcip	dr	1
	Calaminæ Præparatæ	dr	3
	Zinci Oxidi	dr	2
	Glycerini	dr	2

Aquam ad 4 oz

In cases of long standing or those which do not respond to the milder lotions Resorcin Paste may be used, eg one part each of Resorcin Starch and Zinc Oxide mixed with two parts of Liquid Paraffin

Electrolysis or applications of X rays may be necessary

In addition a search should be made for septic foci which must be eradicated. Dyspepsia requires treatment and Mist Bismuthi Co cum Pepsino (B P C) or Dilute Hydrochloric Acid dr 1 may be given. A vegetarian diet is sometimes useful

RUBELLA

Incubation period—14 to 21 days

The patient should be isolated for a week from the appearance of the rash and need only be confined to bed if febrile. No other treatment is required.

SCABIES

The successful treatment of scabies is dependent on the attention paid to the details of technique. The most effective medicaments are —

Benzyl Benzoate

Unguentum Sulphuris (P P) $\frac{1}{2}$ strength

Unguentum Potassii Polysulphidi (B P C)

Mut gal. (Mesulphen)

1 *Benzyl Benzoate* This has the advantage that it does not produce dermatitis. It may be employed —

(a) As a lotion 3½ ounces of which are required to cover the whole body consisting of equal parts of Benzyl Benzoate Methylated spirit and soft soap

(b) As an emulsion (N W F) of which 2½ ounces are sufficient and which is therefore more economical.

Benzyl Benzoate

2o

Lanette Wax

2

Water to

100 parts

(c) As a vanishing cream which must be well rubbed in
This is less painful for children.

Stearic Acid	7.5
Triethanolamine	2.0
Benzyl Benzoate	25.0
Water to	100.0 parts

Routine (i) The patient takes a bath and soaks for ten minutes

(ii) The whole body is then washed freely with soap and a rough flannel

(iii) The patient is dried and the emulsion or lotion applied from the neck downwards with a shaving brush or 2 inch paint brush. The application is allowed to dry and the patient puts on clean underclothing

(iv) Two such treatments are advisable on successive days or within a week

(v) All used clothing and bed linen should be sterilized

2 Sulphur Severely infected cases may relapse with Benzyl Benzoate therapy and the routine Sulphur treatment may be necessary. Unguentum Sulphuris (B.P. 10%) is rather too strong for most individuals and $\frac{1}{2}$ strength is more suitable for general use

(i) Place the patient in a hot bath for 10 to 20 minutes and lather all over with soft soap. Scrub with a soft nail brush especially the affected areas in order to open the burrows

(ii) Dry well and immediately apply Sulphur Ointment (All over the trunk and limbs if the lesion is extensive)

(iii) Put on clean night-clothes and place in a bed with clean linen

(iv) Avoid washing off the ointment in the morning

(v) Repeat this routine at intervals of 24 hours until three applications of ointment have been made

(vi) In the meantime disinfect by boiling or fumigation all the sheets and underclothing which have previously been used by the patient. (A very hot iron may be more suitable for some articles)

In no case should Sulphur Ointment be used for more than 3 days at a time as it may itself produce a dermatitis. In those cases with a delicate skin or when superimposed dermatitis is already present, the Sulphur may be mixed with an equal amount of Zinc Ointment.

Dermatitis, following the application of Sulphur, should be treated with Calamine Lotion or the following —

Zinci oxidi	3 0
Lanolin Anhyd	5 0
Aq. Dest	2 0
Vaselin Alb	20 0 parts

Sulphur Ointment should be diluted with an equal amount of Vaseline when required for infants.

Mitigal (Bayer) is a liquid organic sulphur compound also obtainable in ointment form, which may be used in place of ordinary Sulphur Ointment.

3 *Unguentum Potassii Polysulphidi* (B.P.C.), Danish Ointment.

A similar technique to that used for Sulphur Ointment may be employed —

1st night Bath and application of ointment

1st and 2nd mornings and evenings Applications of ointment

3rd morning Bath with clean linen and underwear

SCARLET FEVER

Incubation period—2 to 4 days

Quarantine—7 days

Infectious period—28 days,

provided there is no discharge from nose, ear or wounds. Such discharge must be regarded as infectious up to 3 months.

General Management

Confine to bed until twenty third day, after which the incidence of nephritis is very low. Give diet of milk, eggs, custard, etc., with copious fluids until temperature is normal, then increase to full diet within a week provided there are no complications. The urine should be tested on

alternate days and daily during third week Tepid sponging is useful for headache, restlessness and insomnia

For purposes of further treatment cases may be divided into mild and severe (the latter including malignant and septic types, now fortunately rare)

MILD CASES

These require little active treatment Gargles may be given if the throat is sore and the following diaphoretic mixture may be found useful (child of ten)

R. Liq Ammon. Acet Dil	dr 2
Spt Æth. Nitrosi	m 20
Glycerin.	dr 1

Aq ad $\frac{1}{2}$ oz., four hourly

The continued administration of Potassium Citrate in doses sufficient to keep the urine permanently alkaline has been suggested in order to diminish the incidence of nephritis

SEVERE CASES

Scarlatinal antitoxin should be given by intramuscular injection of 20 to 30 cc and repeated if necessary irrespective of the age of the patient Intravenous injection appears to be more effective in shortening the duration of the disease and diminishing the incidence of complications but on account of the increased risks of this method it can only be recommended for routine use in epidemics of exceptional severity such as are now rarely seen

A good rule for the administration of serum is to give it at once to the obviously severe cases, and also to those having a temperature of over 101° F, on the second day In epidemics of malignant type, convalescent serum is said to be more effective

SYMPTOMS AND COMPLICATIONS

For sore nares Ungt Hyd Ox Flav should be applied, nasal syringing is generally unnecessary but if employed should be carried out with great gentleness using normal saline

The throat condition may require treatment with gargles (e.g. Pot Chlor, Pot Permang, Glycothymoline, or a gargle containing free chlorine prepared thus Place

200 grains of Pot Chlorate in a large bottle add 40 minims of strong HCl. Leave for 10 minutes then add gradually 1 pint of water. Dilute with an equal quantity of water before use)

In septic cases, provided the procedure does not disturb the patient too much syringing with any of the above may be employed. Ice may be given to suck.

For cervical adenitis either Antiphlogistine, ice compresses or applications of Glycerin and Ichthyol may be used. The opening of abscesses should be delayed as long as possible.

The tympanic membranes should be examined regularly, especially if there is a rise of temperature or earache. Otitis media is best treated with Glycerin and Carbolic drops (see page 105), and early paracentesis if the inflammation does not subside. Fomentations which make the meatus sodden should not be used. The most important point in the treatment of otorrhoea is to keep the meatus free from discharge. Even young children (six and over) can be taught to swab out their own ears. In addition, three or four times a day the meatus should be thoroughly cleansed by an attendant who instils the drops and then coats the canal with a layer of Ungt Hyd Ox Flav.

Later Carbolic drops are replaced by Spirit. Hydrogen Peroxide is best avoided.

If mastoiditis with a post auricular swelling develops a Wilde's incision (down to, and including the periosteum $\frac{1}{4}$ inch behind the auricle) may be carried out as a temporary measure, but a mastoidectomy will be required (a) if the temperature has not subsided in 48 hours (b) if the wound has not closed in 2 weeks (c) if the ear is not dry in 2 months.

Nephritis requires treatment on ordinary lines (see page 220).

The pains of rheumatism are controlled by Salicylates in full doses.

Sulphaniamide does not appear to have any marked effect on the course of the disease but may be of value in the treatment of the septic complications.

SCURVY

The essential point of both the prophylactic and active treatment of adult and infantile scurvy is the supply of an adequate amount of *Vitamin C* in the diet

Orange or tomato juice may be given to children (4 tea-spoonsful sweetened with sugar daily) Adults may take the whole fruit together with green salads and unboiled milk Lemonade made with fresh lemons may also be drunk

Various preparations of Ascorbic Acid are now obtainable The average daily prophylactic dose for an infant is 50 milligrams by month (Curative = 250 mg) The addition of *Vitamin P* may also be of value

The general management of infantile cases is important. The child must be handled with great care and when movement is necessary should be carried on a pillow The affected limbs should be wrapped in cotton wool and may be supported by light splints or sand bags The clothing should be so arranged that it can be removed without lifting the infant and the bed-clothes should rest on a cradle

Local treatment of the mouth in adults consists of giving mouthwashes, e.g. Hydrogen Peroxide In severe cases the gums may be painted with a 2% solution of Silver Nitrate

SEA-SICKNESS

In the majority of instances this is of vestibular or labyrinthine origin but may be increased by psychological factors

PREVENTION

A susceptible individual should regulate his diet avoid alcohol and take moderate exercise for a few days before sailing The bowels should be opened and he should take an easily digested meal 2 hours before going on board A berth amidship is best and, while some prefer to remain lying down in their cabins, others are better on deck In any case, warmth is essential and the subject should be well wrapped up

Potassium Bromide, taken some hours before departure and repeated at intervals, is valuable Another remedy

which is sometimes very effective is Chloritone in capsules of 5 grains taken before the boat starts and repeated at four hourly intervals if required. One or two capsules each containing $2\frac{1}{2}$ grains of Veramon and Phenacetin are often successful. There are a number of proprietary preparations in use some of which are based on these drugs.

TREATMENT

Bromide and Chloritone may be continued separately or together but Sodium Bicarbonate 10 to 20 grains should be added on account of the tendency to acidosis. Sodium Amytal Veronal or Adalin may be given to induce sleep and Hyoscine is sometimes valuable. The patient must be induced to take some food preferably dry e.g. cold chicken and biscuits. Sugar is useful in diminishing acidosis and in some instances, alcohol acts as a gastric sedative. If blood pressure is not depressed Sodium Nitrite 5 grains four hourly is useful.

Care must be taken to avoid poisoning by overdosage with drugs.

SMALL-POX (Variola)

Incubation period—14 days

Infectious period—until all scabs have separated and all ulcers are healed

Quarantine period—16 days

Prophylaxis Vaccination repeated at intervals of 10 years or more frequently at the time of an outbreak. Vaccination within 3 to 4 days of exposure will confer immunity.

General Management

The treatment of the disease is almost always carried out in a special isolation hospital is mainly symptomatic and depends on the severity of the case.

Mild, discrete and modified types require no more treatment than that suggested for chicken pox (page 54). Confluent and severe cases require careful attention. Abundant ventilation, freedom from bright light, an air or water bed, light bed-clothes, copious fluids and attention to the bowels are necessary.

The patient should be turned from side to side to prevent pulmonary complications. The eyes need constant care and should be bathed with Boric or weak Perchloride of Mercury lotion (1 in 10,000), Ungt Hyd Ox Flav may be applied to the lids, especially at night.

Tepid sponging or warm baths, to which Potassium Permanganate has been added, should be given twice daily. The foetor may be mitigated by sprinkling the bed clothes with Eucalyptus Oil or vaporizing Creosote and bathing the skin with water to which Eau de Cologne has been added.

It may be necessary to cut the hair short and the face may be covered with a lint mask, soaked in 2% Carbolic lotion or Glycerin. Splinting the arms or encasing the hands in lint gloves may be necessary.

During the healing stage, irritation may be relieved by Lead lotion and antiseptic ointments may be applied to ulcers.

Painting the whole body with 5% Potassium Permanganate solution or Tincture of Iodine from the beginning is recommended for reducing the later sepsis and may be carried out daily.

One intravenous injection of 10 c.c. of 1 in 500 Potassium Permanganate is also said to be beneficial.

25 to 100 c.c. of convalescent serum (taken between the twenty fifth and fortieth days of the disease) is said to be useful in severe cases.

Sulphonamide drugs have been employed. They appear to have no effect on the small pox virus itself, but are of value in minimizing and treating complications.

SOFT SORE (*Chancroid*)

The diagnosis should be confirmed by taking repeated scrapings and the Wassermann reaction. During this period, saline dressings should be applied. When syphilis has been excluded, the lesions may be dressed with Iodoform powder.

Sulphanilamide gives good results. Dmelcos' Vaccine is sometimes employed but only after syphilis has been excluded as this vaccine may disturb the serological diagnosis.

STOMACH CANCER OF THE

The only curative measure in this condition is complete excision of the growth which should therefore be attempted as early as possible provided there is no jaundice or other evidence of secondary deposits. Even if the growth is not removable relief from obstructive symptoms may be afforded by gastro enterostomy. Death from starvation may be prevented by performing a gastrostomy when a growth is causing obstruction at the cardia.

Medical treatment is palliative. In inoperable cases with pyloric stenosis or dilatation of the stomach gastric lavage is of great value. The patient can often be taught to carry this out himself. Warm water or if there is any excess of mucus a solution of Sodium Bicarbonate may be used. This procedure should not be delayed until the late stages since its early employment is usually appreciated by the patient.

In carcinoma of the stomach the patient may eat more or less what he likes provided the food is well tolerated and no increase in symptoms is produced. As a general rule frequent small feeds of soups gruel custard jelly milk and various milk foods orange juice and in some cases pounded fish or chicken are most suitable. There is no contra indication to the use of alcohol which has the advantage of being easily absorbed and having sedative effects. In advanced cases rectal salines may be required.

Gastric lavage often relieves much of the pain but in other instances drugs may be necessary. Simple analgesics such as Aspirin in mixture form Veramon Allonal Veganin etc. may be tried first. If these fail there should be no delay in the administration of Opium e.g. Nupenther Tinct. Opi Chlorodyne. Morphine tablets, $\frac{1}{4}$ to $\frac{1}{2}$ grain dissolved under the tongue two or three times a day. injections of Morphine or Omnopon may be necessary.

There are no clear indications for deep X ray therapy or radium implantations but such measures may sometimes be considered as palliatives.

STOMACH, ACUTE DILATATION

This serious condition, which is sometimes post operative or may occur after spinal injuries during pneumonia enteric fever etc, must be promptly and energetically treated

The patient should be placed prone in bed or slightly turned to the left side with a pillow under the pelvis and the foot of the bed raised. A stomach tube should be passed and the stomach washed out with warm saline the procedure being repeated as often as necessary. Alternatively, a Ryle's tube may be swallowed and left *in situ* so that the stomach may be kept continuously empty by suction with a syringe or by attaching the end of the tube to a Sprengel's pump.

Nothing should be allowed by mouth but rectal or subcutaneous salines must be given. A binder may be applied to the abdomen. Injections of Strychnine $\frac{1}{10}$ grain Pituitrin 1 c.c. and Acetylcholine 0.1 gram Carbachol or Mecbolyl may be given every few hours as required. The last two named are especially valuable.

STOMACH, FOREIGN BODIES IN

The presence exact situation and progress of a swallowed foreign body should be determined by means of X rays aided if necessary by a barium meal. The treatment must to some extent depend on the nature and number of the foreign bodies present. Fortunately however the majority are passed without difficulty and without the production of symptoms. The stools should be inspected daily until the body has been passed. A diet consisting mainly of porridge and mashed potatoes should be given and purgatives strictly avoided.

If the object remains in the stomach for a prolonged period an operation (gastrotomy) must be considered. When the foreign body is impacted in the duodenum an attempt should be made to return it to the stomach for extraction.

STOMATITIS

1 Search for and remove any cause e.g. dental sepsis dyspepsia excess of tobacco (smoked or chewed) the administration of mercury or bismuth Vincent's organisms may be responsible for some cases (see page 338)

2 Give frequent mouth washes e.g. Potassium Chlorate 10 to 15 grains to 1 oz

The following more elaborate formula may be used if desired

R Phenol's Lq	m 4
Tinct Arnica	m 4
Pot Chlor	gr 15
Glycerin	m 10
Aq Rosæ	ad 1 oz

3 Give Potassium Chlorate by mouth either as a mixture or in tablet form

Dose (adult) 5 to 10 grains (child) 2 to 5 grains t d s

4 If aphthæ or ulcers are present apply Glycerin of Borax or Tincture of Myrrh If the ulcers are painful they may be touched with Silver Nitrate or the following paint

R Ac di Salicyli	gr 30
Glycerin	dr 5

5 In very septic cases Eusol or Sanitas may be used as a mouth wash

6 Gum margins may be packed with cotton wool saturated with a paste of Zinc Oxide and Ol of Cloves the dressing being renewed every 48 hours for several days

7 Applications of 1% Gentian Violet or Tincture of Merthiolate (Lilly) and painting gum margins with 20% Chromic Acid followed by Hydrogen Peroxide mouth washes are recommended

8 Nicotinic Acid may be of value

SUBACUTE COMBINED DEGENERATION OF THE CORD

(See Pernicious Anæmia page 12)

SUNBURN

PREVENTION

1 Adequate protection from the sun's rays, especially of the arms, shoulders and back

2 When sun bathing is being carried out, it should commence with short exposures, especially in fair people. It must be remembered that actinic rays are very potent by the sea and in the presence of snow

3 The application of Coconut Oil before and after exposure appears to minimize the risk of burning and to hasten the onset of pigmentation, but its use should not lull the applicant into a false sense of security, for graduated exposure must still be carried out if burns are to be avoided

TREATMENT

1 Mild cases Calamine lotion applied frequently

2 More severe cases Lead lotion

3 Most severe cases Apply Tannic Acid lotion (2%) or a suitable Tannic Acid Jelly, e.g. Tannafax, Pasta Acidi Tannici (B.P.)

4 Ungt. Zinci et Eucalypt may be applied during the healing stages

5 It may be necessary to confine severe cases to bed and sedatives may be required to produce sleep

6 Subsequent exposure should be avoided

7 Sun bathing is dangerous in pulmonary tuberculosis and is not without the risk of lighting up a latent focus. It is therefore contra-indicated in those patients who may be suspected of or who are known to have had pulmonary tuberculosis. Individuals who feel tired or feverish after exposure or who perspire at night should take their evening temperature. If it is raised, further sun bathing should be avoided until chest trouble is definitely excluded, preferably by X rays

SUNSTROKE (Heat Stroke)

The headache, vomiting, vertigo and occasional syncopal attacks of mild cases should be treated by

1 Placing the patient flat on his back in as cool a spot as possible, loosening the clothing and dashing cold water on the face and limbs

2 Smelling salts may be used for syncope. More severe cases require injections of Strychnine or Nikethamide

3 Artificial respiration may be necessary

When hyperpyrexia is present a cold bath ice pack with rectal injections of ice cold water may be given. The objection to the latter is that the rectal temperature may be obscured, for it is important not to lower this below 101° F lest syncope ensue. An ice-bag should be applied to the head. For marked venous congestion a venesection may be performed.

SYCOSIS BARBÆ

This is a staphylococcal infection and should not be confused with tinea or impetigo although it may be superimposed as a secondary infection on the latter condition

1 The beard should be cut as short as possible. Daily shaving is apt to irritate and spread the condition but a growth of hair is difficult to keep clean so that shaving with a sharp razor on alternate days should be attempted as a compromise

2 Before shaving is carried out the hair should be extracted from infected follicles with forceps, the pus mopped away with cotton wool and the area covered with antiseptic ointment or lotion before lathering with soap

3 In severe or neglected cases a Starch Poultice may be necessary in the first place to remove crusts

4 Ointments (a) Sulphathiazole (5-10%)

(b) Ungt Hydrarg Ammon Dil

5 Lotions

(a) Bifiodide of Mercury (1 in 4000)

(b) R Capri Sulph

Zinci Sulph

gr 24

gr 30

Aq ad 6 oz

6 The lesions may be painted with Gentian Violet (1% aqueous solution) or 2% Malachite Green in 80% Alcohol. This has the disadvantage that the skin is temporarily discoloured.

7 Applications of X rays may be necessary to produce epilation of the affected areas in resistant cases.

8 Antogenous vaccines (Staph. Aureus) or alternatively a stock vaccine (Aureus and Albus) are very useful and should be commenced with a dose of 25 million organisms, increasing by 20 million at weekly intervals up to 100 million.

SYPHILIS

Only a general outline of the main methods of treatment can be given here, but adequate therapy is so important, especially in the early stages, that works on syphilology should be consulted when necessary.

Primary and Secondary Syphilis

The diagnosis should be confirmed by the examination of scrapings from the primary sore and, later, by the Wassermann reaction. Repeated courses of treatment should be given, extending over a period of 1 to 2 years during which the Wassermann reaction should be tested at intervals. This test should also be carried out over a further period of 2 years and examination of the Wassermann reaction of the cerebrospinal fluid is also advisable at the end of this time before a cure is pronounced.

The following is a suggested scheme of treatment.

1 Apply saline soaks to the primary sore and take scrapings. When a positive scraping is obtained apply Ungt Hydrarg. Ammon. Dil.

2 Give Neoarsphenamine (N.A.B.) intravenously at weekly intervals, commencing with 0.3 gram, 0.45 gram and continuing with 0.6 gram until a total of 5.0 grams has been given.

3 Give Bismuth by injection at the same time, e.g. Bismostab 1 c.c. (0.2 gram) followed by nine injections of

2 The application of deep X rays to the cervical and upper dorsal regions of the spinal cord is often followed by arrest in the progress of the disease and symptomatic improvement, and should therefore be regarded as the routine form of treatment

3 Laminectomy, with incision of the affected area of the cord, is an operation which is sometimes performed and which has a low mortality. The cases most likely to benefit by this procedure are those in which there is considerable pressure on the cord, as shown by motor and sensory disturbances in the lower limbs in addition to the characteristic changes in the arms and hands. In such instances examination of the cerebrospinal fluid may also show evidence of spinal cord block (e.g. Queckenstedt's jugular compression test)

4 Massage and exercises are of value in improving the disability when the progress of the condition has been arrested.

5 Two monthly courses of Mercury by inunction and Potassium Iodide 5 grains t.i.d., by mouth is an old method of treatment which is said to be beneficial but much less certain in its effects than the other measures

TABES DORSALIS

The diagnosis should be confirmed by finding a positive Wassermann reaction in the blood and cerebrospinal fluid. The following type of colloidal gold curve may be obtained
0214210000

The treatment consists of giving repeated courses of Bismuth, Neosalvarsamine and Potassium Iodide (see Primary Syphilis page 317). Tryparsamide is sometimes more effective than Neosalvarsamine but should not be employed if there is any evidence of early optic atrophy (see G.P.I., page 136).

The diet should be generous and strict attention to the bowels is necessary. Alcohol is best avoided.

Lightning pains may be relieved by Aspirin, Veganin or Veramon but sometimes Sodium Salicylate, Ammonium Chloride or Colchicum are effective. Morphine must not be employed as a routine measure but may perhaps be allowed

on special occasions Atropine or drugs of the Acetyl choline group may be tried

Gastric crises are often relieved by Chloretone 10 grains, t d s In other cases, Tincture of Iodine, 5 minims in a little milk may be tried

Laryngeal crises are rare but may be relieved by inhalations of Amyl Nitrite

For rectal crises, empty the bowel with enemata and give Dover's Powder by mouth

The functions of the bladder must be carefully observed Liq Strychninæ, 5 minims, t d s, may be given if there is any difficulty in micturition Retention of urine may be treated by the injection of 1 cc of Carbachol (Doryl) repeated if necessary Catheterization may be necessary, and inflammation will require treatment with Hexamine or some other urinary antiseptic

Ataxia is often greatly improved by massage and re-educative exercises

In order to prevent the occurrence of perforating ulcers corns should be treated with great care and cutting is generally inadvisable

Charcot's joints should be immobilized until any local inflammatory reaction has subsided Later orthopædic apparatus or operative measures may be necessary

TETANUS

PROPHYLAXIS

In every case of a lacerated or penetrating wound contaminated by road dirt or soil, a prophylactic dose of antitetanic serum should be given, e.g. 2000 to 3000 International units The larger doses should be given unless the injection is made shortly after the injury

Active immunity can be produced by the injection of Tetanus Toxoid

TREATMENT

1. *General Management* (a) The patient must be kept absolutely quiet in a darkened room All sudden noises must be avoided and examination reduced to a minimum

(b) Diet It is essential to provide adequate nourishment Milk (3 pints) eggs (6) and sugar should be the basis of the diet and brandy may be added The patient should as far as possible, suck these through a tube Nasal feeding or feeding by a tube passed through the mouth after extraction of a tooth may be necessary but should be regarded as a last resort after the other method has failed Chloroform anaesthesia may be necessary if the passage of the tube provokes the onset of spasms

(c) Catheterization and enemata may be necessary, but aperients are less disturbing than the latter and should be used if possible

(d) Intravenous or subcutaneous salines with Glucose are often valuable especially if insufficient nourishment is being taken

2 Sedatives The sedatives commonly employed are Chloral 30 grains every 4 hours with an equal amount of Potassium Bromide Chloretone 20 grains every 4 hours The dose may be doubled or trebled if the drugs are given per rectum Injections of Morphia and Atropine are sometimes useful

More recently, Phenobarbitone, Soluble Phenobarbitone, Sodium Amytal and Bromethol (Avertin) have been tried with success

Avertin appears to be a satisfactory sedative to employ when the spasms become severe and when the signs of exhaustion commence The dosage varies with the severity of the case One daily rectal injection may be sufficient, the amount being reduced as the spasms become less More frequent administration may, however be necessary Opportunity should be taken of carrying out manipulations such as enemata and surgical dressings when the patient is most deeply under the influence of the drug

Rectal Paraldehyde (4 dr in 2 oz of saline) is also a suitable and less expensive sedative

5 to 10 c c of 25% Magnesium Sulphate given by intramuscular injection two or three times a day appears to have an antispasmodic effect

Sedatives should be pushed in order to reduce the number of spasms to a minimum.

3 *Tetanus Antitoxin* Although this has no effect on the toxin already fixed in the nervous tissues, adequate doses should prevent the absorption of further quantities. The object of antitoxin treatment is to neutralise toxin—

- 1 In the infected wound and its vicinity
- 2 In the blood stream and lymphatics
- 3 In the motor nerves by which the toxin passes to the spinal cord
- 4 In the cerebrospinal fluid.

The initial dose should be not less than 25 000 International units given by intravenous or intramuscular injection and repeated in 12 hours. On subsequent days, 30 000 to 60 000 units should be given until a total of 200 000 to 300 000 units have been administered. Some authorities recommend an initial dosage of 90 000 to 200 000 units intravenously. A short incubation period and a wound situated in the proximal parts of a limb indicate a large dose.

The value of intrathecal injections, by the lumbar or cisternal route, is still disputed, but there is no doubt that large doses of serum introduced by this method may produce an aseptic meningitis. It would appear to be unnecessary to give serum in this way in all cases if massive doses are given by the other routes as early as possible and the spasms are controlled by full doses of sedatives.

The following is another scheme of dosage which has been suggested —

- | | |
|------------------|---|
| 1st day: | 12 500 units into the vicinity of the wound |
| | 12 500 units intravenously |
| | 12 500 units intrathecally |
| 2nd day | 12 500 units intravenously |
| | 12 500 units intrathecally |
| 3rd and 4th days | 12,500 units intravenously |

4 *Curare* Recent work suggests that Curare or its alkaloid Curarine, will prove of value in diminishing the number of spasms by blocking the myo-neural junctions.

The requisite dosage is *not yet quite clear* but the drug should be given cautiously for the first few doses in order to avoid respiratory embarrassment (e.g. Curarine 0.2 mgm increasing to 0.5 mgm every 4 hours)

5 *Toilet of Wounds* This should only be carried out when an interval of some hours has elapsed after an adequate initial dose of antitoxin. Oxidizing antiseptics should be used for dressing and irrigation e.g. Eusol Hydrogen Peroxide Iodine or Potassium Permanganate. The modern tendency is to be as conservative as possible in the surgical measures adopted.

TETANY

The treatment of tetany depends upon its type and cause

1 *Tetany associated with Alkalosis* (adult) This may be produced by hyperpnoea excessive vomiting and overdosage with alkalis

(a) Attention should be devoted to the cause of the condition

(b) Give Ammonium Chloride 15 to 30 grains by mouth or per rectum if vomiting is severe every 3 or 4 hours until the symptoms disappear

(c) Chloral and Bromide may be found useful in diminishing the spasms

2 *Tetany due to Calcium Deficiency* (adult) This occurs in two types of condition (i) defective calcium absorption e.g. idiopathic steatorrhoea osteomalacia and (ii) in cases of parathyroid deficiency, e.g. tumour or following thyroidectomy

(i) Give Calcium Lactate 30 grains every 4 hours by mouth or Calcium Gluconate 10 cc of a 10% solution by intramuscular or intravenous injection, or Calcium Chloride 20 cc of a 5% solution intravenously

(ii) For parathyroid tetany give Parathormone 20 units intramuscularly one two or three times a day. This should be controlled by periodic estimations of the serum

calcium which should not be permitted to rise above 10 to 12 mgm per 100 cc. The approximate dosage of Parathormone required is 5 units per kilogram body weight, in 24 hours. Parathyroid extract by mouth is unlikely to be of value.

3 Tetany in Childhood. As a rule, this is seen as a manifestation of rickets. It should be treated by the administration of Calcium Lactate, 15 grains, every 4 hours. Small doses of Syrup of Chloral may also be of value.

THROMBO-ANGELITIS OBLITERANS (Buerger's Disease)

This form of arteritis, which shows a predilection for males between 30 and 40 and, possibly, heavy smokers, has received much attention during the last few years and many views have been expressed as to the correct line of treatment.

The main clinical features are redness or cyanosis of the dependent foot, intermittent claudication on walking, absence of pulsation in the dorsalis pedis artery, often associated with pain and followed by trophic changes and later by gangrene.

Treatment may be conservative or surgical, the former being tried first.

CONSERVATIVE TREATMENT

- 1 A period of rest in bed, with the legs horizontal.
- 2 Cease permanently all tobacco consumption.
- 3 Tight shoes must be avoided, the feet kept scrupulously clean and nails and corns carefully trimmed.
- 4 Contrast baths may be tried in early cases, i.e. immerse feet alternately for 1 minute in baths of water at 45° F and 105° F for 20 minutes twice daily.
- 5 Radiant heat baths for 30 minutes twice daily.
- 6 Protein shock by the intravenous injection of T.A.B. vaccine, commencing with 15 to 30 million and increasing up to 40 to 50 million or more at three-day intervals. The course may be repeated every few weeks.
- 7 Intravenous injections of hypertonic saline have been suggested (of value).

8 Injection of vaso-motor drugs, e.g. Acetylcholine, various muscle extracts, Lacarnol, Padutin. These drugs may be expected to relieve symptoms caused by spasm but are unlikely to influence the degenerative changes present in the arteries.

9 Local treatment of ulceration and gangrene by maintaining asepsis and awaiting a line of demarcation.

10 For pain Codeine, 1 grain, and the application of anæsthetic ointments have been recommended.

OPERATIVE TREATMENT

The following methods have been employed:

- 1 Ligation of the femoral vein
- 2 Pen arterial sympathectomy (of doubtful value)
- 3 Lumbar sympathetic ganglionectomy (This operation may be followed by sterility in the male)
- 4 Amputation when other methods have failed.

THRUSH

Thrush is most common in bottle fed infants but may occur in debilitated adults. In the former, bottles and teats must be sterilized and the mouth cleaned after each feed.

Glycerin of Borax is then applied. In resistant cases the mouth may be swabbed with a solution of Sodium Sulphite (1 dr. to 2 oz. of water) before Glycerin of Borax is used. The same treatment may be employed in adults.

(See also Stomatitis)

THYROTOXICOSIS

There is a choice of three lines of treatment, viz (1) Medical, (2) Radiological, (3) Surgical. Each has its advocates and each may play some part in the treatment of any one case, but it is fairly clear that at the present time there is no ideal method and every case must be judged on its own merits.

The prevention and treatment of cardiac disorders, which commonly terminate in auricular fibrillation, is of the greatest importance and must be kept constantly in mind.

Mild and early cases should be given a trial with medical

treatment, and radiology may be used as an adjunct, for it does not necessarily preclude operative measures at a later date. Radiology is especially indicated if the services of an expert surgeon are not available.

The presence of an adenoma is an indication for operation. Likewise, if an nictal fibrillation is of recent development, thyroidectomy should be performed after a period of treatment with Digitalis and, in suitable cases, Quinidine.

For further information larger works must be consulted.

MEDICAL TREATMENT

The main points are to procure mental and physical rest, preferably in a cool, bracing climate, an ideal place being a quiet country garden. The seaside is best avoided. In hot weather the amount of exercise permitted should be reduced to a minimum and the bed-clothes should be few and very light, while the judicious use of an electric fan will often render a seriously ill patient more comfortable. Severe cases must be confined to bed for several weeks or even months.

An accurate record of the pulse rate and the weight should be kept.

Diet This should be light and nourishing. Fish, eggs, chicken, fat bacon, custard, milk—2 to 3 pints daily, vegetables and fruit are suitable articles. Red meat, alcohol and coffee should be avoided (i.e. rich in carbohydrate and relatively poor in protein).

Drugs

1. **Iodine** The actual place of Iodine in treatment is still debated. One point appears quite certain, viz. that it should be given for a week or two before and for a similar period after operation.

Some authorities give Iodine continuously during medical treatment. As a result the gland tends to become progressively firmer. If it is used it would be wise to omit the drug for a few days from time to time.

Lugol's Iodine is the most satisfactory form to employ, commencing with 2 minims, t.i.d., the dose may be increased to 5 minims or 10 minims three times a day.

Potassium Iodide may be used.

2 Quinine Hydrobromide is a useful drug and may be given alone or during iodine therapy in doses of 3 to 5 grains t d s

3 Liquor Arsenicalis is sometimes employed

4 Bromides may be given for restlessness or small doses of Phenobarbitone may be used for the same purpose

Under no circumstances should thyroid extract be given and purgatives should be avoided

THYROTOXIC CRISES

These are apparently due to a rapid increase in the thyroxine in the blood and may be manifested by gastro intestinal or cardiac disturbances of a serious type. Absolute rest is essential. Cold compresses or a Leiter's tube should be applied to the thyroid and the patient should be kept as cool as possible. Frequent small feeds of milk which may be diluted or peptonized should be given and rectal salines with Glucose may be necessary. For diarrhoea give

B. Acid Sulph Dil	m 10
Tinct Opil	m 5 to 10
Spt Chloroformi	m 10
Aq ad 1 oz t d s	

Small doses of Morphia may be useful and injections of Pituitrin $\frac{1}{2}$ cc have been employed. Lugol's Iodine should be given and sedative drugs will be required for restlessness.

Bromide and Phenobarbitone should be given for tachycardia with normal rhythm but full doses of Digitalis are required for auricular fibrillation. No attempt should be made to reduce the pulse rate much below 100 as further slowing may be dangerous. Mental crises may also occur.

SURGICAL TREATMENT

The proper selection of cases and the appropriate time to operate are most important. Operation is rarely called for during the first 6 months of the disease but at the end of that time should there be little or no improvement it

must be considered. The onset of auricular fibrillation may also be an indication to operate after the heart has been controlled by a course of *Digitalis* therapy

Economic factors and social conditions must also be considered. If adequate rest cannot be obtained and financial or business matters demand an early return to work, surgical intervention will shorten the duration of treatment

TINNITUS

Noises in the ear or head are symptomatic and the treatment of a case involves the most careful search for the aetiological factors which in some instances may be obscure

1 Diseases of the ear (often associated with deafness)

(a) External ear cerumen, polypi or foreign body

(b) Middle ear catarrhal otitis media, otosclerosis

(c) Internal ear Ménière's syndrome, labyrinthitis, acoustic nerve tumour

2 Unassociated with aural disease (often synchronous with the pulse)

Atheroma of the carotids, carotid aneurysm (*N.B.*—congenital intracranial aneurysms of the circle of Willis are rarely associated with an intracranial bruit), cerebral angioma, hypertension, anaemia, endocrine disorders

3 Drugs Quinine, Salicylates, Amidopyrine

4 Auditory hallucinations

Three observations should be carried out without fail in all cases in which the patient complains of head noises, viz estimation of the blood pressure, examination of the ears, and auscultation of the skull. The last is not often performed, but it is by no means rare to detect an audible bruit with a stethoscope, an observation which may lead to the discovery of a carotid aneurysm or cerebral angioma

TREATMENT

Treatment of the cause is the primary consideration. The following measures may be useful symptomatically

1 Bromides or Phenobarbitone

- | | | | |
|---|----------------------------|---------------|----|
| 2 | R. Acid Hydrobromici Dil | m. | 30 |
| | Quininae Sulphatis | gr | 1 |
| | Spiritus Chloroformi Co | m | 10 |
| | Aquam ad 1 oz t d s p c | | |
| 3 | R. Potassii Iodidi | gr | 10 |
| | Potassii Bromidi | gr | 20 |
| | Tinct Jaborandi | m | 30 |
| | Syrup Glycerophosphatis Co | dr | 4 |
| | Aq Auranti Flor | ad 1 oz t d s | |

4 Other measures which have been recommended include Corrosive Sublimate $\frac{1}{2}$ grain as a pill twice daily before meals Galvanism to the ear and back of the neck or a blister over the mastoid process The patient should avoid excess of meat alcohol tobacco strong tea and coffee

TONGUE, DISEASES OF

1 ACUTE GLOSSITIS

Mild cases require frequent hot mouth washes or ice may be given to suck and sometimes affords greater relief A brisk purge e.g. Calomel should be administered

Severe cases are often accompanied by great swelling of the organ which may threaten to impede respiration In such instances an incision on each side of the middle line made fairly deeply from behind forwards is necessary

2 CHRONIC GLOSSITIS

Under this heading a number of conditions may be included but the essential points to remember are (1) the condition may be syphilitic and therefore a Wassermann test should be performed and (2) chronic inflammation is a precursor of cancer and a careful watch must be kept on its progress

The various types of chronic inflammation of the tongue are often resistant to treatment In addition to using simple mouth washes all forms of irritation such as broken or carious teeth must be removed excess of tobacco must be avoided and under no circumstances should caustics be applied

Ultra violet rays have been used with success in some cases. Surgical treatment may be required.

The sore tongue associated with anæmia may be painted with an aqueous solution of Chromic Acid (10 grains to 1 oz.)

3 ULCERATION OF THE TONGUE

An attempt should be made to ascertain the nature of the ulceration and, where possible, to treat or remove the cause.

(a) *Simple Ulcers* Any associated dyspepsia should receive attention and simple mouth washes should be given. If these measures are not successful, paint with Chromic Acid solution, 10 grains to 1 oz., night and morning or Carbolic Acid, 1 in 80. Iodoform powder or Glycerin of Tannic Acid may also be tried. If the edges become indurated, excision must be considered.

(b) *Syphilitic ulcers* require antisyphilitic treatment and local applications of Chromic Acid solution (10 grains to 1 oz.)

(c) *Tuberculous ulcers* may be excised or treated by diathermy if the disease in the lungs is not too advanced. If phthisis is very active, scraping the ulcer under local anæsthesia and applying pure Carbolic Acid may bring about improvement. As palliative measures, daily painting with Lactic Acid 20% or dusting with Orthocaine may be tried. Applications of Bismuth Ointment are sometimes useful. Soft food is necessary and a mouth wash should be used after meals.

(For further details of treatment of diseases of the tongue larger works must be consulted.)

TONSILLITIS, ACUTE

In every case, diphtheria must be excluded either by clinical observation or bacteriological examination and, if any doubt be present, diphtheria antitoxin administered without awaiting the result of the swab.

Treatment should commence with a purge, Calomel 3 grains, followed by a saline being the best. The patient

should be confined to bed while pyrexia lasts and isolated as far as possible from others

Frequent hot gargles should be given and there are many to choose from, e.g.

R Potass Chlor gr 10

Aq ad 1 oz

or R Liq Hydrarg Perchlor dr 1

Acid. Hydrochlor Dil m 10

Glycerin dr 1

Aq ad 1 oz (for adults only)

Glycothymolene, Isterine, IZAL Lysol $\frac{1}{2}\%$ though less pleasant is cheap and very effective

The following is one of the most useful mixtures for internal administration and should be gargled and then swallowed. It has the disadvantage that it tends to blacken the teeth, which should therefore be brushed immediately after it has been taken

R Potass Chlor gr 10

Liq Ferri Perchlor m 15

Glycerin dr 1

Aq ad 1 oz, every 4 hours

An alternative method is to give Potassium Chlorate gargles as before and the following Aspirin mixture which may be gargled and swallowed. This has the advantage of relieving any associated headache and joint pains

R Acid. Acetylsalicyl gr 10

Pulv Tragacanth Co gr 5

Aq ad 1 oz, every 4 hours

This is particularly useful in relieving pain after tonsillectomy

A lozenge containing Guaiacum, 3 grains, every 2 hours is also useful in some cases

Formalin tablets, 6 to 8 per diem may be taken by other members of the household as a prophylactic

In severe cases, syringing the throat may be preferable to using a gargle

In children who will not gargle the throat may be painted with Protargol (10%), and Potassium Chlorate tablets may be sucked

Fomentations or Antiphlogistine may be applied to the neck if painful adenitis be present. Swallowing is easier if large gulps are taken rather than sips and firm pressure is applied just behind the angles of the jaw. Thickened feeds are often easier to take than plain liquids. Plenty of fluid, however, should be supplied, e.g. Imperial Drink, or lemonade containing Glucose.

A course of Sulphanilamide, Sulphapyridine or Sulphathiazole is advisable in all severe cases.

A suitable tonic should be given during convalescence, e.g.

R Quinin Sulph	gr 2
Liq Ferri Perchlor	m 15
Acid Sulph Dil	m 3
Syrup	dr 1
Aq Chloroformi	ad 1 oz t d s

or Syrup Ferri Pbos cum Quin et Strych, dr $\frac{1}{2}$ to 1, t d s.
A few days' change with plenty of fresh air is also beneficial.

PERITONSILLAR ABSCESS (Quinsy)

Premature opening is inadvisable, but when pus is present an incision should be made without delay. This may be done with a pair of sinus forceps, a scalpel the blade of which is protected by strapping up to the last $\frac{1}{4}$ inch, or some special instrument. A good light is essential and preferably a head mirror or lamp should be used. A satisfactory opening can be made by inserting sinus forceps obliquely inwards immediately behind the anterior pillar of the fauces.

General anæsthesia is dangerous but if necessary solid Cocaine, a 10% solution or 25% paste may be applied for a few minutes to the area to be incised.

TONSILLITIS, CHRONIC

Tonsillectomy may be considered advisable. In other cases, gargles should be used regularly and every effort made to improve the general health. The tonsils should be painted three times a day with Mandl's Paint, i.e.

R IodL	gr 6
Potass Iodidl.	gr 20
Ol Menth. Pip	m 5
Glycerini	oz. 1

TONSILLECTOMY, PAIN AFTER

- 1 Gargles containing Aspirin 10 grains to the ounce
- 2 The following preparation used as a spray

R	*Anæsthesin (Bayer)	gr	10
	Spt Vini Rect	dr	1½
	Glycerin Acid Carbol (Phenolis)	oz	1
	* or Benzocaine (B P)		

(especially useful before food to relieve dysphagia)

3 Aspirin gr 10 mixed up in a spoonful of honey is useful and is especially appreciated on waking from sleep

TROPHŒDEMA (Milroy's Disease)

Rest in bed may give temporary improvement and should be followed by bandaging the leg with a crepe bandage or the repeated application of Elastoplast bandages

The injection of colloidal Calcium and Vitamin D, e.g. Ostelin has been suggested.

UNDESCENDED TESTIS

Evidence is accumulating that certain cases can be cured by the injection of gonadotropic hormone. The most hopeful are bilateral ones with subnormal genital development where retention does not appear to be due to anatomical abnormality. The optimum age for treatment is between 10 and 14 years. Before the age of 10 premature puberty may be induced.

Pregnyl (Organon) Antutrin-S (P D & Co) Physotab (Boots) Gonan (B.D.H.) (dose = 500 rat units) should be given in twice weekly doses by intramuscular injection for one to three months. Several courses of six injections may be given at intervals of 2 to 3 months.

If there is no improvement in six months it is unlikely that descent will occur.

UNDULANT FEVER

The DIAGNOSIS of this condition may be confirmed:

1. Agglutination of B. Abortus by the patient's serum in dilutions over 1 in 100.
2. Blood culture. Special cultural technique is necessary.¹
3. Intra-dermal test with B. Abortus vaccine.

TREATMENT.

1. *General Management.* In view of the prolonged duration of the fever the patient's strength should be maintained by an adequate diet which should be pushed whenever possible and during intervals when the pyrexia is abating. The bowels should be regulated; carminatives may be necessary for flatulence and Aspirin may be given for headache. Salol is sometimes useful. Careful oral hygiene and frequent mouth washes are necessary.

2. *Protein Shock.* This is often a successful method of treatment. Intravenous injections of T.A.B. Vaccine are employed. The initial dose should not exceed 50 million organisms. This form of therapy is contra indicated in old age, cardiovascular disease and in debilitated patients.

3. *Stibopben (Fouadin).* The following course of intramuscular injections may be given into the gluteal region 1 c.c. on first day, 3.5 c.c. on second day, 4.5 or 5 c.c. on alternate days, the whole course lasting ten days.

4. *Sulphanilamide and Sulphapyridine* have also been employed with success. The latter is probably more effective and should be given in full doses early in the disease.

5. *Arsphenamine.* Good results have been obtained by a course of N.A.B. Twice-weekly injections commencing with 0.3 gram increased to 0.45 gram, until a total of 2.5 to 3.5 grams have been given.

6. *Bacterial filtrates* which have been specially prepared (Brucellin, Melitin, Abortin) are also used.

¹ See B.M.J., 1930, ii, 679, and Lancet, 1935, ii, 7451.

URÆMIA

The blood urea should be estimated, for many of the symptoms of uræmia, viz headache, convulsions, amaurosis, and coma, are found in hypertensive encephalopathy, a condition in which the blood urea is within normal limits. The treatment of the two conditions is similar (see page 178), so that there need be no delay in carrying out the necessary therapeutic procedures.

1 A strong purge should be administered, e.g. Pulv. Jalapæ Co, dr 1; or Magnesium Sulphate, dr 3 to 4, but purging should not be overdone and subsequently the bowels should be opened by enemata.

2 Induce the skin to act by hot packs or radiant heat baths. Pilocarpine is sometimes used as a diaphoretic, $\frac{1}{16}$ to $\frac{1}{8}$ grain, but is not without risk of depressing the heart and producing pulmonary œdema. This danger is considerably lessened if the injection is delayed until after sweating has been initiated by the hot pack or radiant heat bath.

3 Venesection, 15 to 20 oz, provided the patient is not anæmic, is perhaps the most effective measure which can be carried out, and should not be delayed. If desired, it may be followed by an intravenous or subcutaneous injection of 1 pint of normal saline.

4 Lumbar puncture is useful when convulsions or coma are present, especially in cases with increased intracranial pressure, which is indicated by papilloedema.

5 Chloral Hydrate with Potassium Bromide, 15 to 20 grains of each, sometimes relieves twitching.

6 For convulsions, Morphia, $\frac{1}{2}$ to $\frac{1}{4}$ grain may be given with caution, but Chloroform inhalations are sometimes necessary. Lumbar puncture may be conveniently performed after the inhalation.

7 For pulmonary œdema, inject Atropine, $\frac{1}{160}$ to $\frac{1}{80}$ grain.

8 For acidosis, give Sodium Bicarbonate, dr 1, every 4 hours.

9 Continuous inhalation of Oxygen may be necessary.

Hot Pack Half fill a tub or bath with very hot water and from it wring out a large and thick doubled blanket. When the superfluous water has been removed the patient's body should be completely enveloped. He should, if possible, be placed on a spare mattress and then covered with other blankets or counterpanes and allowed to remain for 1 hour while perspiration continues and fluid is administered by mouth. A careful watch should be kept on his pulse and general condition.

URTICARIA

A search should be made for the cause, which may be exogenous or endogenous in origin.

1 Temporary relief may be obtained by the injection of Adrenalin (1 in 1000), 5 minims. In recurrent cases, Ephedrine Hydrochloride, $\frac{1}{2}$ to 1 gram, may be given twice or three times a day.

2 Calcium Lactate, 20 grains, t d s, may be given by mouth. In severe cases the intramuscular or intravenous injection of Calcium Gluconate (10-20 c c of 5%) may be necessary.

3 Whole blood injections (10 c c removed from a vein and injected immediately intramuscularly into the patient's buttock) at intervals of 4 to 7 days.

4 Calamine Lotion alone or with the addition of Liq Carbonis Deterg, is useful as a local application, or the following

R Liq Picis Carb ¹ (Carb Deterg)	m 20
Acid. Hydrocyan. Dil.	m 5
Glycerin -	m 10
Aq ad 1 oz.	

Ft. lotio

VERTIGO

A thorough search must be made for the cause and if occurring in the course of middle-ear disease this symptom may call for an operation. In addition to the symptomatic remedies suggested under Tinnitus, page 329, the following may be tried

- | | | | | | | |
|----|---|-----------------------|---|---|---------|-------|
| 1 | R | Acid Hydrobromici Dil | . | . | m. | 20 |
| | | Tinct Gelsemii | . | . | m | 10 |
| | | Acid Acetylsalicylici | . | . | gr. | 10 |
| | | Pulv Tragacanth. Co | . | . | qs | |
| | | Aq. Aurantii Flor | | | ad 1 oz | t d s |
| 2. | | Potassii Iodidi | . | . | gr | 10 |
| | | Potassii Bromidi | . | . | gr. | 15 |
| | | Tinct Belladonnae | . | m | 5 to 10 | |
| | | Liq Arsenicalis | . | . | m | 2 |
| | | Aq ad 1 oz t d s, p c | | | | |

3 Full doses of Nicotinic Acid, e g 50 mgm., t d s, reduced later to b d, is of value in some cases of Ménière's syndrome

4 In the severe attacks occurring in Ménière's syndrome, the injection of Pilocarpine, $\frac{1}{8}$ to $\frac{1}{2}$ grain, may be tried. If attacks are severe and hearing has been lost, exposure of the external semicircular canal and the injection of $\frac{1}{2}$ c c. of Absolute Alcohol may be justified and has successful results. Another method of treatment is intracranial division of the eighth nerve.

Regular therapy with Bromide or Salicylates will do much to diminish the frequency of attacks.

VINCENT'S ANGINA

1 Confirm the diagnosis by direct smears from the throat.

2 Remove membrane by rubbing with Hydrogen Peroxide (10 vols) and apply Tinct Iodi or Mandl's Paint to the lesion three- to four hourly.

3 For more severe cases local applications of Neoarsphenamine (N A B) or Sulpharsphenamine on a swab moistened with Glycerin (1 in 15).

4 Rapid improvement usually follows the injection of either of these substances (N A B, 0.3 gram, intravenously, Sulpharsphenamine, 0.18 gram, intramuscularly or subcutaneously) which should therefore be used in all severe cases.

5 Nicotinic Acid, 50 to 250 milligrams daily for periods up to a week or 10 days.

VOMITING

The treatment of vomiting must be directed primarily towards the cause of the condition (e.g. affections of the alimentary tract, toxic states or nervous causes). If excessive, purely symptomatic treatment may be required

1. Prevent dehydration by rectal salines and Glucose.
2. If tolerated, Glucose may be given by mouth.
3. A little dilute brandy may be given.
4. Iced champagne is often tolerated when other fluids are rejected, and may be given in 2 to 4 drachm doses every quarter to half an hour.
5. Gastric lavage may be required, especially in pyloric stenosis. (Normal saline or Sodium Bicarbonate, 1 drachm to 1 pint.)
6. Acid. Hydrocyan Dil, 3 to 6 minims, or Tincture of Iodine, 3 minims, may be given in 1 drachm of water and repeated hourly for several doses. Chlorotone, 5 grains, in a cachet is useful, especially in sea sickness.
7. Cachets, moistened before swallowing, of:

R Bismuth. Subnit.	. . . .	gr. 20
Cerul Oxalat.	. . . .	gr. 5

8. A mustard plaster or poultice may be applied to the epigastrium.

9. The following draught is also recommended

R Liq. Adrenalin.	. . . .	m 30
Acid Hydrocyan. Dil.	. . . .	m. 3
Tinct. Cardamom. Co.	. . . .	m. 30
Liq Bismuthi et Ammon. Cit	. . . .	m. 30
Aq. ad 1 oz.		

VOMITING, "CYCLICAL"

DURING THE ATTACK.

1. Exclude all fat from the diet, especially milk, butter and vitamin-containing oils.
2. Give Glucose by the mouth (by the rectum or intravenously if necessary in severe cases).

3 Sips of water either iced or hot may be given at frequent intervals. Later albumen water barley water whey or weak tea.

4 Apply fomentations to the abdomen.

BETWEEN ATTACKS

1 An ordinary diet may be given including butter and milk but cooked fats are best avoided. Plenty of sugar should be allowed in the form of honey syrup and holed sweets.

2 A search should be made for any focus of sepsis e.g. teeth tonsils pyelitis.

3 Avoidance of fatigue and excitement an open air life preferably in a bracing climate.

4 Extract of Malt or Extr. Maltis Ferratum (B.P.C.) may be given.

VOMITING, HYSTERICAL

When this condition has been absolutely confirmed all organic disease having been excluded by careful examination of the nervous system renal function and alimentary tract supplemented by radiography and other investigations when necessary psychotherapy should be undertaken. The patient is best isolated or removed from home surroundings. He should be told that the original cause either physical or emotional has been removed. He should rapidly be placed on a full diet and encouraged as much as possible. (See also p. 180.)

VOMITING, OF PREGNANCY

Early Morning

1 A cup of tea or hot milk with a dry biscuit on waking alternatively a glass of lemonade containing plenty of glucose.

2 Breakfast in bed with subsequent rest for half an hour in the recumbent position.

3 Attention to the bowels.

4. Removal of any oral sepsis.
5. General encouragement and explanation that the condition is not necessarily pathological.

Hyperemesis gravidarum (excluding pathological conditions, e.g. gastric ulcer, cerebral tumour, appendicitis, etc.).

1. Rest in bed, preferably secluded and with the services of a good nurse. In neurotic types this is most important and strong suggestion should be used. Threatening to wash out the stomach often has a good effect.

2. Dilute and eliminate toxins by administering copious fluids by mouth, by the rectum or intravenously and by purgation or by enemata.

3. Potassium Bromide may be given per rectum and any of the drugs and methods mentioned in the section on vomiting may be tried.

WARTS (Verrucae)

1. For warts on the hand or scalp where scarring is of no account, Glacial Acetic Acid, Trichloroacetic Acid or strong Nitric Acid, applied on a match-stick or glass rod are useful. The surrounding skin should be protected with Vaseline.

2. Daily application of the following wart paint, and paring of hard keratin is useful.

Phenol	}	. . . of each 10 parts
Glacial Acetic Acid		
Salicylic Acid		
Strong Tincture of Iodine	.	20 parts
Industrial Spirit	.	to 100 parts

3. Liq. Formaldehyd. is also useful.
4. Applications of CO₂ snow are effective.
5. Electrolysis produces satisfactory cosmetic results.
6. X-ray therapy is useful if the lesions are numerous.
7. The following remedies may be given internally and are sometimes effective:

(a) Mag. Sulph. dr. $\frac{1}{2}$ to 1, t.d.s.

(b) Green Iodide of Mercury (Hydrarg. Iod. Viride),
 $\frac{1}{2}$ grain, t.d.s. (adult dose).

Plantar Warts are contagious, and this should be remembered especially in schools and institutions, where infected persons should use only their own bath mats and never go bare footed.

Boring into the centre of the wart with a sharpened stick coated with the following paint is recommended in early cases.

R. Zinc Chloride	dr	$\frac{1}{2}$
Collod Acid Salicyl. (1 in 10)	ad oz	1

WHOOPIING-COUGH (Pertussis)

Incubation period—10 to 14 days

Infections period—4 weeks after the onset of paroxysms

Quarantine period—14 days

That there is no specific cure for the disease is indicated by the countless remedies which have been employed, and the fact that they are usually most successful in the hands of those who first advocate them.

GENERAL MANAGEMENT

Good nursing and careful feeding are probably the most important factors. The child should be confined to bed during the catarrhal stage and when pyrexia or severe bronchitis are present, the temperature of the room being maintained at about 65° F. Plenty of fresh air is essential, but whether the child is allowed in the garden must be determined by the climatic conditions and the severity of the paroxysms. In younger children the abdomen should be supported by a binder.

Diet. It is unwise to change the diet of infants, but feeds should be small and frequent and some nourishment should always be given after a paroxysm which has terminated in vomiting, in order that digestion may take place before the next attack occurs.

Dry crumbling foods such as biscuits which irritate the pharynx and provoke coughing must be avoided. Milk and soups are suitable for older children.

Drugs. The multiplicity of drugs which have from time to time been recommended indicates that the most that can be hoped from them is some measure of relief from the paroxysms.

One of the most useful is Ephedrine (gr. $\frac{1}{12}$ for an infant to gr. $\frac{1}{2}$ for a child of five) in the form of a linctus (e.g. Elixir Ephedrinæ Hydrochloridi B.P.C.) to which Belladonna may be added.

Phenobarbitone (gr. $\frac{1}{4}$ for an infant to gr. $\frac{1}{2}$ for a child of five) three times a day, is sometimes useful.

Other measures which have been tried include:

During the *catarrhal stage* (child of five):

R. Potass. Iodidi.	gr. 2
Syr. Scillæ.	m. 20
Aq. ad 2 dr.; four-hourly.	
or R. Tinct. Ipecac.	m. 5
Syr. Scillæ.	m. 20
Syr. Tolu.	m. 20
Aq. ad 2 dr.; four-hourly.	

During the *paroxysmal stage* (child of five):

R. Pot. Brom.	gr. 5
Tinct. Belladon.	m. 5 to 10
Tinct. Ipecac.	m. 5
Tinct. Opii Camph.	m. 10
Syr. Tolu.	m. 20
Aq. ad 2 dr.; four-hourly.	

At night, Syrup of Chloral or Tinct. Opii Camph. may be given for severe cases. In older children small doses of Linct. Diamorphinæ (Heroin) may be tried.

The chest may be rubbed with Camphorated Oil or:

R. Ol. Eucalypt.	dr. $\frac{1}{4}$
Liq. Terebinth.	ad 1 oz.

Chloretone, in 1 grain doses, and Benzyl Benzoate, 10 drops of a 20% solution in milk for a child of two, have been used.

Another suggestion is Gold Tribromide, gr. $\frac{1}{16}$ — $\frac{1}{8}$ four times daily.

Creosote may be given internally for persistent pulmonary catarrh

Inhalations of Oxygen with 5% CO₂ are said to shorten paroxysms. An oxygen tent is of great value in severe cases and those complicated by bronchopneumonia

Complications such as bronchopneumonia and otitis media should be treated with Sulphapyridine

Severe convulsions which do not respond to ordinary measures may be treated by the removal of 5 c.c. of cerebrospinal fluid

CONVALESCENCE is important. Good food, Cod liver Oil or other vitamin preparations, Iron for anaemia, or tonics should be given

A change of air, provided the climate is mild and sunny, is beneficial

Vaccines

There has been a recent tendency to employ vaccines more extensively both in the treatment and prophylaxis of this disease. In both instances it is essential that a potent preparation be used in sufficient doses. In view of the fact that secondary organisms play a part in the disease after the respiratory mucosa has been damaged by the whooping-cough bacillus a mixed pertussis vaccine should be employed in treatment e.g.

Bordet-Gengou bacilli	5000 million
Influenza bacilli	200 to 400 million
Hæmolytic streptococci	200 million
Micrococcus catarrhalis	200 "
Staphylococcus aureus	200 "
Pneumococci	200 "

Staph. Albus or Friedlander's bacillus may be added if desired. The value of vaccine treatment is, however, unproven

PROPHYLAXIS

If adequate dosage is employed it is probable that some protection against pertussis can be obtained. In these circumstances a mixed vaccine is not necessary or desirable

The ideal time to immunize a child is after the age of 6 months and in any case before school age

The dosage of vaccine is still controversial, but one of the following may be employed (1) Four doses of 1 c c containing 10,000 million organisms per c c at intervals of a week between the first, second and third injections, and four weeks between the third and fourth. Total, 40,000 million organisms. (2) First week, 1 c c Second and third weeks, 1.5 c c Fourth week, 3 c c Total, 70,000 million organisms (Reactions are more likely to occur with this larger dose)

The injections are given intramuscularly to infants and subcutaneously to older children. If performed in infancy, re vaccination by the injection of 1 c c is of value before the child goes to school

If the child is already incubating the disease, complete immunity is uncertain, but some modification in its severity is to be expected. A mixed vaccine should be employed. Similarly, if paroxysms have commenced the use of this vaccine commencing with a dose of 2000 million may help to shorten the disease, six injections may be necessary

Opinions differ about the potency of vaccines, but if they are to be of any value they must be prepared from fresh and virulent cultures

Passive immunity lasting a short time may sometimes be conferred by the intramuscular injection of 10 c c of convalescent serum. Two or three times this amount of ordinary adult serum may also be employed

WORMS, INTESTINAL

ANKYLOSTOMIASIS (Hookworm Disease)

A number of drugs have been used as anthelmintics in the treatment of this condition.

1 *Thymol* Give saline purgative at night. At 6 a m give 30 grains of Thymol. At 8 a m repeat the dose. At 10 a m repeat saline purgative. This procedure may be repeated at weekly intervals until stools are free from ova
(Dose for a child = 7 grains)

2 *Betanaphthol* Administered in the same way in doses of 10 grains (adult)

3 *Carbo Tetrachloride* For an adult 50 minims (3 c c) are administered in a capsule or in a little water without preliminary starvation and followed in 3 hours by magnesium sulphate.

The dose for a child is 3 minims (0.2 c c) for each year

N B—This drug may have serious toxic effects in the presence of hepatic or renal disease or if there be any idiosyncrasy

4 *Ol of Eucalyptus* Two doses of the following mixture are given with an interval of half an hour. No additional purgative is required

R. <i>Ol Eucalypt</i>	m 10
Chloroform	m 20
<i>Ol Ricini</i>	dr 5

5 *Tetrachlorethane* This is the most recent drug to be employed and good results are reported from its use. Capsules containing 1 gram are given at hourly intervals on 3 consecutive days 3, 4 and 5 grams being taken on the respective days. A saline purge is given 3 hours after the final dose on the last day.

The urine should be tested for albumin for 3 or 4 days but the patients with cardiac, renal or hepatic disease should not be treated by this method.

Subsequent anaemia requires full doses of Iron and some times blood transfusion.

ROUND WORMS (*Ascaris lumbricoides*)

This condition should be treated with Santonin (adult dose 3 to 6 grains for a child of two 1 to 2 grains) administered on an empty stomach and followed by a purge such as Calomel. It may be given to a child in Castor Oil and followed if necessary by Syrup of Figs or in the following powder

R. Santonin	gr 2
Pulv Scammonia Co	gr 2
Calomel	gr $\frac{1}{2}$

Ft pulv

The urine is coloured bright yellow or red. Usually one dose is sufficient, the proof that all worms have been ejected rests on the absence of ova from the faeces on subsequent examination.

TAPE WORMS

The treatment of tape worms necessitates following a strict routine. The patient is starved for 2 days, fluids only being given, i.e. 2 pints of milk and beef tea. Magnesium Sulphate, dr 2 to 4, should be administered each morning. On the third morning Liquid Extract of Male Fern (Extr Filicis Liq, dr 1 to 1½) is given, e.g.

R. Extr Filicis Liq	dr 1½
Mucilag Tragacanth	dr 1
Syrup Zinzibers	dr 1
Aq Chloroformi	ad 1 oz

Two hours later Mag Sulph, dr 2, or a Seidlitz Powder is taken and, if the bowels have not been opened within an hour, a soap and water enema must be administered. Under no circumstances should Castor Oil be given.

The motions should be collected in warm water and a search made for the head. If this is not found the treatment should be repeated in 10 days.

Another method is to administer Carbon Tetrachloride, 50 minims, in a little water followed 2 hours later by a purgative. This drug may, however, exert a toxic effect on the liver. Pelletierine Tannate, 6 to 10 grains is also employed.

During treatment with Male Fern the patient should remain in bed and resist any desire to vomit.

N B—Cysticercus Epilepsy. The onset of Epilepsy in an adult who has lived in the tropics may be due to development of the cysticercus stage of *Tænia solium* in the brain. Confirmation may sometimes be obtained by demonstrating calcified cysts in X rays of the muscles and brain or by microscopic examination of a subcutaneous nodule after excision. A complement fixation test may also be carried out. The only treatment available is to control the fits by Bromides and Phenobarbitone.

THREAD WORMS

After a simple enema has been returned a rectal injection of 6 to 10 oz of Infusion of Quassia (1 in 40) should be given with the hips raised and retained as long as possible. The thighs of a small child may be tied together if necessary. Ungt Hyd Nit Dil or Ungt Gallæ cum Opio may be applied to the anus for itching. The child should be prevented from re-infecting itself by tying the nightdress below the feet at night, or by applying splints. Liquid Paraffin by mouth or anthelmintics such as Santonin may also be given if desired.

The toxic effects of Phenothiazine, which has recently been used, make it impossible to recommend it for general use.

TRICHINIASIS

If worms be present in the intestine an attempt should be made to remove them without delay. Repeated doses of Calomel, e.g. 2 grains, t.d.s. Glycerin may also be given by mouth. Various anthelmintics such as Santonin, and Thymol have been tried, but their effect is doubtful. No drug can affect the cysts once they have appeared in the muscles and analgesic drugs must be given for the pain.

Intravenous injections of Calcium Gluconate have been employed.

XEROSTOMIA

Dryness of the mouth occurs commonly in all febrile disorders also in diseases of the salivary glands. Occasionally no obvious cause is found. In severe and persistent cases the mouth must be kept scrupulously clean and any dental sepsis remedied. Frequent mouth washes should be given and Glycerin of Borax may be applied. A bitter mixture given before meals sometimes helps. Pilocarpine Nitrate, $\frac{1}{4}$ -grain tablet, may be allowed to dissolve slowly under the tongue.

APPENDIX

Notes on Chemotherapy and the Sulphonamide Drugs

There are three main groups of drugs in use and it is probable that others will be prepared some of which may prove superior to those at present employed and have less toxic effects. New drugs must, however, be employed with caution and only after careful study of the literature so that the practitioner is aware not only of the advantages but also of the dangers.

- (1) The *Sulphanilamide* group includes the following proprietary preparations—*Prontosil*, *Proseptazine*, *Solu septazine*, *Streptocide*, *Ruhiazol*, *Sulphonamide P*.
- (2) The *Sulphapyridine* group, the best known example of which is *Dagenan* or *M & B 893*. Of this type also are *Uleron* and *Alhucid*.
- (3) The *Sulphathiazole* group, including also *Sulphamethyl thiazole* and *Sulphadiazine*.

The following table gives a rough indication of the effectiveness of the main drugs against infection by different organisms.

Organism	Sulpha- nilamide	Sulpha- pyridine	Sulpha- thiazole
<i>Pneumococcus</i>	0	++++	+++
<i>Meningococcus</i>	+++	++++	+++
<i>Streptococcus Haemolyticus</i>	++++	++++	++++
" <i>Viridans</i>	0	+	+
" <i>Faecalis</i>	0	0	++
<i>Gonococcus</i>	+++	++++	++++
<i>Bacillus coli</i>	++	++	++
Gas gangrene organisms	+	++	+++
<i>Salmonella</i> group	0	+	++
<i>Staphylococcus Aureus</i>	+	++	+++

Dosage The dosage of these drugs must be carefully adjusted to the age of the patient. It is usual to commence with a single administration of double the routine dose to ensure an early concentration of the drug in the blood. Tablets of the drug (each of which usually contains 0.5 gram) are generally given by mouth and may be chewed or powdered and swallowed with a glass of water. An alternative and better method is to crush and suspend in milk, glucose saline or a mucilage, e.g. Tragacanth. If the drug is not tolerated by mouth, soluble preparations suitable for intramuscular injections are in most instances available. In view of the risk of local necrosis, doses exceeding 1 gram should be given intravenously in saline.

The initial adult dose is 2 grams, followed by $1\frac{1}{2}$ grams four hourly. This is reduced to 1 gram four hourly as the patient progresses. It is always wise, however, to continue the administration of these drugs in reduced doses for a few days after the temperature has fallen to normal, as premature withdrawal is often followed by recurrence of pyrexia and the infective process. Sulphathiazole, being more rapidly excreted, requires a somewhat larger dose to maintain an adequate concentration in the blood, and an initial dose of 4 grams should be given.

Daily dosage scheme (maximum)

Age (years)	0-3	3-6	6-9	9-12	12-15	over 15
Grams per day	2	3	$4\frac{1}{2}$	6	$7\frac{1}{2}$	9

For infants the following may be found useful

Age	1-3 months	6 months	3 years	5 years
4-hourly dose in tablets	$\frac{1}{2}$	$\frac{1}{2}$	$\frac{1}{2}$	1
Daily dose in grams (approx)	1	$1\frac{1}{2}$	$2\frac{1}{2}$	3

It is natural that there should be a tendency to use such valuable remedies empirically in many conditions in which

bacteriological control is clearly impossible and considerable latitude in their use is reasonable. But, what must be avoided is their continued administration after a trial period of a few days (e.g. 5 to 7) has produced no clinical effect. More harm is done by the continued administration with cautious initial doses than by full and effective doses of the drug for a few days. After a course lasting 10 to 14 days there should be an interval of two or three days before a second course is commenced.

As in the case of other valuable drugs, the Sulphonamides not only bring their benefits but also their dangers.

1 *Minor toxic effects* These include nausea, vomiting, abdominal colic, acidosis, general lassitude, depression and, sometimes, pyrexia ("drug fever") after the original infection has subsided. Vomiting is said to be minimized by giving Nicotinic Acid, 50 milligrams, with each dose of the drug. Tinct. Opi, m 5, half an hour before each dose, may be useful. Small doses of sedatives, e.g. Phenobarbitone, gr $\frac{1}{2}$ four times daily, or Nembutal, gr $\frac{1}{2}$ twice daily, may be helpful in relieving minor toxic symptoms. If it becomes severe and the continuation of the drug is essential, the tablets should be replaced by injections.

2 *Cyanosis* is due to sulph or methæmoglobinæmia. It is therefore wise to avoid taking eggs, onions, Epsom Salts or other Sulphur-containing substances which are reputed to increase cyanosis. It may be treated by the injection of 10 c.c. of 1% Methylene Blue or Nicotinic Acid by mouth.

3 *Anæmia* A considerable diminution in the hæmoglobin and red cell count is sometimes observed and should be treated with Iron.

4 *Agranulocytosis* This is a very serious complication which may prove fatal. Most cases appear to be due to over dosage but some are due to idiosyncrasy after quite moderate amounts. The condition may not appear until after the drug has been stopped. The treatment consists of giving Pentose Nucleotide, blood transfusion, etc (page 6). All cases having prolonged or heavy doses should, therefore, have white cell counts performed at intervals.

5 *Hæmaturia and renal complications* Crystals of Sulphapyridine and Sulphathiazole derivatives can often be seen in the urine. The presence of hæmaturia calls for stoppage of the drugs and the administration of copious fluid. As a preventive measure, however, all cases taking these drugs should

be given (1) adequate but not excessive fluids (2) equivalent doses of alkali e.g. Potassium Citrate or Sodium Bicarbonate. Ureteric catheterization is necessary if complete anuria develops. If this is unsuccessful unilateral nephrostomy has been suggested.

6 *Skin rashes* Some authorities consider that these are due to sensitization which will clear more rapidly if the drug is continued especially if combined with Nicotinic Acid. Others prefer to withdraw the drug. Exposure to natural or to artificial sunlight should be avoided during the administration of Sulphonamides.

7 *Nervous complications* e.g. polyneuritis and encephalopathies have been reported.

Penicillin

Recent work suggests that Penicillin, an active principle of the mould *Penicillium notatum* will in future play an important part in chemotherapy.

The difficulty and expense of production make limitation of supplies likely and in the first instance will necessitate its limitation to those cases less likely to benefit by the sulphonamides such as Staphylococcal infections.

As far as experimental evidence goes the best method of administration is by intramuscular injection every 3 hours. In very urgent cases the intravenous route may be used. The average dose is 15 000 units but this must be adjusted to keep the blood bacterostatic. It may be necessary to continue injections for 2 to 3 weeks.

Local treatment when the substance can be applied directly to infected areas is of great value and much smaller quantities are required.

POSOLOGICAL TABLE

N.B.—As a general rule when a drug is given per rectum the dose should be doubled

	IMPERIAL	METRIC
*Acetanilidum (Antifebrinum)	gr 2 to 5	0.12 to 0.3 gram
Acetum Scillæ	m 10 to 30	0.6 to 2 c c
*Acetylcholinæ Bromidum	gr 1½ (approx)	0.1 gram
Acidum Aceticum Dil.	dr ½ to 1	4 to 4 c c
" Acetylascylum Ascorbicum (prophy- lactic daily 500- 1000 units) Therapeutic daily 2000-5000 units	gr 5 to 15 gr ½ to 1	0.3 to 1 gram 0.05 to 0.05 gram
Benzoicum	gr 5 to 15	0.3 to 1 gram
Boricum	gr 5 to 15	0.3 to 1 gram
Citricum	gr 5 to 30	0.3 to 2 grams
Hydrobrom. Dil.	m 15 to 60	1 to 4 c c
Hydrochlor. Dil.	m 5 to 60	0.3 to 4 c c
Hydrocyanic Dil.	m 2 to 5	0.12 to 0.3 c c
Hypophosphor. Dil.	m 5 to 15	0.3 to 1 c c
Lactum	m 15 to 30	1 to 2 c c
Mandelicum	gr 30 to 60	2 to 4 grams
Nicotinum	gr ½ to 1½	0.05 to 0.1 gram
" Nitricum Dil.	m 5 to 60	0.3 to 12 c c
" Nitrohydrochlor. Dil.	m 5 to 20	0.3 to 1 c c
Oleum	m 5 to 15	0.3 to 1 c c
Phosphoricum Dil.	m 5 to 60	0.3 to 4 c c
Salicylicum	gr 5 to 10	0.3 to 0.6 gram
" Sulphuricum Aromaticum Dil.	m 5 to 20 m 5 to 60	0.3 to 1 c c 0.3 to 4 c c
" Sulphurosum	dr ½ to 1	2 to 4 c c
Tannicum	gr 5 to 10	0.3 to 0.6 gram
Tartaricum	gr 5 to 30	0.3 to 2 grams
*Aconitina	gr ⅛ to ⅜	0.001 to 0.0015 gram
Adrenalina	gr ⅛ to ⅜	0.001 to 0.005 gram
Æther	m 15 to 60	1 to 4 c c
Agar	gr 60 to 240	4 to 16 grams
Aloe	gr 2 to 5	0.12 to 0.3 gram
Alonum	gr ½ to 1	0.015 to 0.06 gram
Alumen	gr 5 to 10	0.3 to 0.6 gram
Amopyrina	gr 5 to 10	0.3 to 0.6 gram
*Ammonii Benzoas	gr 5 to 15	0.3 to 1 gram
" Carbonas	gr 5 to 10	0.3 to 0.6 gram
" Bromidum	gr 5 to 30	0.3 to 2 grams

* These preparations are non-official

	IMPERIAL	METRIC
Ammonii Chloridum	gr 5 to 60	0.3 to 4 grams
Amyl Nitris (<i>inhaled</i>)	m 2 to 5	0.12 to 0.3 c.c.
Aneurine Hydrochloridum (Vit. B ₁)		
(<i>Prophylactic, daily 100-</i> <i>200 units</i>)	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.0003 to 0.0006 gram
(<i>Therapeutic, daily 200-</i> <i>600 units</i>)	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.0006 to 0.0018 gram
*Antimonii Oxidum	gr 1 to 2	0.06 to 0.12 gram
*Antimonium Sulphuratum	gr 1 to 2	0.06 to 0.12 gram
Antimonii et Potassii Tartras	gr $\frac{1}{2}$ to 1	0.002 to 0.008 gram
" " (<i>emetic</i>)	gr $\frac{1}{2}$ to 1	0.03 to 0.06 gram
" " (<i>intravenously</i>)	gr $\frac{1}{2}$ to 2	0.03 to 0.12 gram
Antipyrinum (Phenazonum)	gr 5 to 10	0.3 to 0.6 gram
Apomorphine Hydrochlorid (<i>hypodermic</i>)	gr $\frac{1}{2}$ to $\frac{1}{4}$	0.001 to 0.002 gram
Aqua Anethi Conc.	m 5 to 15	0.3 to 1 c.c.
" Dest.	fl oz $\frac{1}{2}$ to 1	15 to 30 c.c.
" Camphorae	fl oz $\frac{1}{2}$ to 1	15 to 30 c.c.
" Chloroformi	fl oz $\frac{1}{2}$ to 1	15 to 30 c.c.
" Cinnamomi Conc.	m 5 to 15	0.3 to 1 c.c.
" Dest.	fl oz $\frac{1}{2}$ to 1	15 to 30 c.c.
" Menthae Piperitae Conc.	m 5 to 15	0.3 to 1 c.c.
" Dest.	fl oz $\frac{1}{2}$ to 1	15 to 30 c.c.
*Aqua Laurocerasi	dr $\frac{1}{2}$ to 2	2 to 6 c.c.
Argentii Nitras	gr $\frac{1}{2}$ to 1	0.008 to 0.016 gram
Arseni Triiodidum	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.001 to 0.016 gram
" Trioxidum	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.001 to 0.005 gram
Asafoetida	gr 5 to 15	0.3 to 1 gram
Aspirin	gr 5 to 15	0.3 to 1 gram
Atropina Atropinae Sulphas	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.00025 to 0.001 gram
Balsamum Peruvianum	m 5 to 15	0.3 to 1 c.c.
" Tolutanum	gr 5 to 15	0.3 to 1 gram
Barbitonum	gr 5 to 10	0.3 to 0.6 gram
Barbitonum Solubile	gr 5 to 10	0.3 to 0.6 gram
Belladonna Pulverata	gr $\frac{1}{2}$ to 3	0.03 to 0.2 gram
" Radix	gr $\frac{1}{2}$ to 2	0.03 to 0.12 gram
Benzocaine	gr 5 to 10	0.3 to 0.6 gram
Benzoinum	gr 10 to 30	0.6 to 2 grams
Benzylis Benzoes	m 5 to 8	0.3 to 0.6 c.c.
Bismuthi Carbonas		
et Salicylas	gr 10 to 30	0.6 to 2 grams
* Subchloridum		
et *Subnitras	gr 5 to 20	0.3 to 1.2 gram
Subgallas	gr 10 to 30	0.6 to 2 gram
* Tartras Solubilis	gr 2 to 5	0.12 to 0.3 gram
Bismuthum Orychthidum	gr 10 to 30	0.6 to 2 grams
(<i>intramuscularly</i>)	gr $1\frac{1}{2}$ to 3	0.1 to 0.2 gram
Præcipitatum		
(<i>intramuscularly</i>)	gr $1\frac{1}{2}$ to 3	0.1 to 0.2 gram
Borax	gr 5 to 15	0.3 to 1 gram
Buchu	gr 15 to 30	1 to 2 grams
*Butyl Chloral Hydras	gr 5 to 20	0.3 to 1.2 gram

* These preparations are non-official.

	IMPERIAL.	METRIC
*Bulboespinae Phosphas	gr. 1½	0.1 gram
Caffeina	gr. 2 to 5	0.12 to 0.3 gram
" et Sodii Benzoas	gr. 5 to 15	0.3 to 1 gram
" " " (hypodermic)	gr. 1 to 5	0.06 to 0.3 gram
*Caffeina Citras	gr. 2 to 10	0.12 to 0.6 gram
Calceferol : (prophylactic, daily, for in- fant) 1000 to 2000 units	gr. ⅛ to ⅜	0.025 to 0.05 mgm.
(therapeutic, daily for in- fant) 2000 to 3000 units	gr. ⅜ to 1½	0.05 to 0.075 mgm.
Calci Carbonas	gr. 15 to 60	1 to 4 grams
" Chloridum	gr. 10 to 30	0.6 to 2 grams
" " (intramuscularly)	gr. ½ to 1½	0.03 to 0.1 gram
" " (intravenously)	gr. 5 to 15	0.3 to 1 gram
" " Hydratum (intramuscularly)	gr. 1 to 3	0.06 to 0.2 gram
(intravenously)	gr. 10 to 30	0.6 to 2 grams
" Glucosae	gr. 30 to 60	2 to 4 grams
* " Glycerophosphas	gr. 3 to 10	0.2 to 0.6 gram
" Hydroxidum	gr. 5 to 15	0.3 to 1 gram
* " Hypophosphis	gr. 3 to 10	0.2 to 0.6 gram
" Lactas	gr. 15 to 60	1 to 4 gram
" Phosphas	gr. 10 to 20	0.6 to 2 gram
Calomel	gr. ¼ to 3	0.03 to 0.2 gram
Calx Sulphurata	gr. ¼ to 1	0.016 to 0.06 gram
Camphora	gr. 2 to 5	0.12 to 0.3 gram
Capicum	gr. ½ to 2	0.03 to 0.12 gram
Carbachol (Doryl)	gr. ⅛ to ⅜	0.001 to 0.004 gram
(subcutaneously)	gr. ⅛ to ⅜	0.00025 to 0.0005 gram
Carboni Tetrachloridum	dr. ¼ to 1	2 c.c. to 4 c.c.
Cascara Sagrada	gr. 20 to 60	1.2 to 4 gram
Catechu	gr. 5 to 15	0.3 to 1 gram
*Cera Oxalas	gr. 2 to 10	0.12 to 0.6 gram
*Chinosol	gr. 1 to 5	0.06 to 0.3 gram
Chlorbutol	gr. 5 to 20	0.3 to 1.2 gram
Chinofonium	gr. 1 to 8	0.06 to 0.3 gram
(rectal)	gr. 15 to 75	1 to 5 grams
Cinchophenum	gr. 5 to 10	0.3 to 0.6 gram
*Chloralformamidum (Chloralamide)	gr. 15 to 45	1 to 3 grams
Chloralis Hydras	gr. 5 to 20	0.3 to 1.2 gram
Chloroformum	m. 1 to 5	0.03 to 0.3 c.c.
Cocaina	gr. ¼ to ½	0.008 to 0.016 gram
Cocaina Hydrochloridum	gr. ¼ to ½	0.008 to 0.016 gram
Codeina; Codeinae Phosphas	gr. ¼ to 1	0.016 to 0.06 gram
Confectio Sennae	gr. 60 to 120	4 to 8 grams
" Sulphuris	gr. 60 to 120	4 to 8 grams
Copaiba	m. 10 to 30	0.6 to 2 c.c.
*Cotarninae Chloridum	gr. ½ to 1½	0.02 to 0.09 gram
Creosotum	m. 2 to 10	0.12 to 0.6 c.c.

* These preparations are non-official.

	IMPERIAL	METRIC
Cresol	m 1 to 3	0.06 to 0.18 c c
Creta	gr 15 to 60	1 to 4 grams
Cupri Sulphas (emetic)	gr 5 to 10	0.3 to 0.6 gram
*Curara (hypodermic)	gr $\frac{1}{2}$ to $\frac{1}{4}$	0.005 to 0.03 gram
Diamorphinum Hydrochlor	gr $\frac{1}{4}$ to $\frac{1}{2}$	0.0025 to 0.005 gram
*Digitalinum (Cryst.)	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.0001 to 0.0005 gram
Digitalis Pulverata	gr $\frac{1}{2}$ to 1	0.03 to 0.1 gram
(single dose)	gr 3 to 10	0.2 to 0.6 gram
Digoxinum (oral, initial)	gr $\frac{1}{8}$ to $\frac{1}{4}$	0.001 to 0.0015 gram
(maintenance)	gr $\frac{1}{16}$ b d	0.00025 gram b d
(intravenously)	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.0003 to 0.001 gram
Elxir Cascarae Sagradae	dr $\frac{1}{2}$ to 1	2 to 4 c c
Emetinae et Bismuth Iodidum	gr 1 to 3	0.06 to 0.2 gram
" Hydrobromidum	gr $\frac{1}{2}$ to $\frac{1}{4}$	0.01 to 0.03 gram
" Hydro (expect)	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.0008 to 0.002 gram
" chloridum (emetic)	gr $\frac{1}{2}$ to $\frac{1}{4}$	0.005 to 0.01 gram
" (hypodermic)	gr $\frac{1}{2}$ to 1	0.03 to 0.06 gram
Emulsio Olei Morrhuae		
(prophylactic, A 1000-2000 units, D 100-200 units)	m 30 to 60	2 to 4 c c
(therapeutic, A 3000-6000 units, D 300-600 units)	m 90 to 180	6 to 12 c c
Emulsio Olei Vitaminat		
(prophylactic A 1000-2000 units, D 100-200 units)	m 30 to 60	2 to 4 c c
(therapeutic A 3000-6000 units, D 300-600 units)	m 90 to 180	6 to 12 c c
Ephedrina	gr $\frac{1}{2}$ to 3	0.016 to 0.13 gram
Ephedrinae Hydrochloridum	gr $\frac{1}{2}$ to 1	0.016 to 0.1 gram
*pseudo Ephedrinae Hydroch	gr $\frac{1}{2}$ to 1	0.03 to 0.06 gram
Ergometrina (intramuscularly)	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.00025 to 0.0005 gram
" (intravenously)	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.000125 to 0.00025 gram
Ergota Preparata	gr 5 to 15	0.3 to 1 gram
*Ergotoxina	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.00085 to 0.0012 gram
Ergotoxinae Aethanosulphonas		
(subcutaneously or intramuscularly)	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.0005 to 0.001 gram
*Erythryl Tetranitras	gr $\frac{1}{2}$ to 1	0.015 to 0.06 gram
Eserine, see Physostigmine		
Eucalyptol	m 1 to 3	0.06 to 0.2 c c
*Ext Aloes	gr 1 to 4	0.06 to 0.25 gram
" Belladonnae Siccum	gr $\frac{1}{2}$ to 1	0.015 to 0.06 gram
" Cascarae Sagradae Liq	dr $\frac{1}{2}$ to 1	2 to 4 c c
" " Sicc	gr 2 to 8	0.12 to 0.5 gram
" Cinchona	gr 2 to 8	0.12 to 0.5 gram
" " Liq	m 5 to 15	0.3 to 1 c c
" Colchici Sicc	gr $\frac{1}{2}$ to 1	0.015 to 0.06 gram
" " Liq	m 2 to 5	0.12 to 0.3 c c
" Colocynthis Comp	gr 2 to 8	0.12 to 0.5 gram
* " Ergota, B P 1914	gr 2 to 8	0.12 to 0.5 gram
" " Liq	m 10 to 20	0.6 to 1.2 c c

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	IMPERIAL	METRIC
*Ext Euconymi .	gr 1 to 2	0.06 to 0.12 gram
" Felis Bovini	gr 5 to 15	0.3 to 1 gram
" Filicis	m 45 to 90	3 to 6 cc
" Gentianae	gr 2 to 8	0.12 to 0.5 gram
" Glycyrrhizae	gr 10 to 30	0.6 to 2 gram
" " Liq	dr $\frac{1}{2}$ to 1	2 to 4 cc
" Hamamelidis Liq	dr $\frac{1}{2}$ to 1	2 to 4 cc
" Hepatis Liq	fl oz 1	30 cc
" " Succum	quantity equivalent to liver	$\frac{1}{2}$ lb or 225 gram
" Hydrastis Liq	m 5 to 15	0.3 to 1 cc
" Hyoscyami Sicc	gr $\frac{1}{2}$ to 1	0.016 to 0.06 gram
" " Liq	m 3 to 6	0.2 to 0.4 cc
" Ipecacuanha Liq	m $\frac{1}{2}$ to 2	0.03 to 0.12 cc
" (emetic dose)	m 10 to 30	0.6 to 2 cc
" Maltis & Gl Vitaminato		
" (A 650-2500 units)		
" D 65-250 units)	m 60 to 240	4 to 16 cc
" Nucis Vomicae Liq	m 1 to 3	0.06 to 0.2 cc
" " Sicc	gr $\frac{1}{2}$ to 1	0.015 to 0.06 gram
" Opi Siccum	gr $\frac{1}{2}$ to 1	0.015 to 0.06 gram
" Pituitarii Liq		
" (subcutaneously)	units 2 to 5	
" Senegae Liq	m 5 to 15	0.3 to 1 cc
" Senna Liq	m 10 to 30	0.6 to 2 cc
" Stramonii Liq	m $\frac{1}{2}$ to 3	0.03 to 0.2 cc
" Stramonii Sicc	gr $\frac{1}{2}$ to 1	0.015 to 0.06 gram
" (In post encephalitic and similar conditions)	gr 1 to 8	0.06 to 0.5 gram
Ferri Carbonas Saccharatus	gr 10 to 30	0.6 to 2 grams
" et Ammonii Citras	gr 5 to 15	0.3 to 1 gram
" et Quininae Citras	gr 5 to 15	0.3 to 1 gram
*Ferri Glycero-phosphas	gr 1 to 5	0.06 to 0.3 gram
* " Hypophosphus	gr 1 to 3	0.06 to 0.2 gram
* " Iodidum	gr 1 to 5	0.06 to 0.3 gram
* " Pyrophosphas	gr 2 to 8	0.12 to 0.5 gram
" Subchloridum Citratum	gr 3 to 5	0.2 to 0.3 gram
" Sulphas	gr 1 to 5	0.06 to 0.3 gram
" " Exocatus	gr $\frac{1}{2}$ to 3	0.03 to 0.2 gram
* " Valerianae	gr 1 to 5	0.06 to 0.3 gram
Ferrum Redactum	gr 1 to 10	0.06 to 0.6 gram
*Gelsemiae Hydrochloridum	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.0005 to 0.002 gram
Glycerinum	dr 1 to 2	4 to 8 cc
" Acidi Borici	m 10 to 30	0.6 to 2 cc
" " Tannici	m 10 to 30	0.6 to 2 cc
" Aluminis	dr $\frac{1}{2}$ to 1	2 to 4 cc
" Boracis	dr $\frac{1}{2}$ to 1	2 to 4 cc
" Phenolis	m 5 to 15	0.3 to 1 cc
*Glycerinum Pepsini	dr 1 to 2	4 to 8 cc
Glyceryl Trinitras	gr $\frac{1}{16}$	0.0005 gram
	(approx)	
*Guaiaci Resina	gr 5 to 15	0.3 to 1 gram
Guaiacol	m 5 to 10	0.3 to 0.6 cc

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	IMPERIAL	METRIC
*Guaiacol Carbonas	gr 5 to 15	0.3 to 1 gram
Hexam na	gr 10 to 20	0.6 to 2 grams
Histamine Phosphas Ac dus (subcutaneous ly)	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.005 to 0.001 gram
Homatropinæ Hydrobrom	gr $\frac{1}{4}$ to $\frac{1}{2}$	0.001 to 0.002 gram
Hydrargyrum (intramuscular ly)	gr $\frac{1}{2}$ to 3	0.03 to 0.2 gram
*Hydrargyri Iodidum Flavum	gr $\frac{1}{2}$ to $\frac{1}{4}$	0.03 to 0.06 gram
Iodidum Rubrum	gr $\frac{1}{4}$ to $\frac{1}{2}$	0.008 to 0.03 gram
*Iodidum V ride	gr $\frac{1}{2}$ to 1	0.002 to 0.004 gram
Oxycyanidum (intramuscular ly)	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.01 to 0.05 gram
Perchloridum	gr $\frac{1}{4}$ to $\frac{1}{8}$	0.005 to 0.01 gram
" Subchloridum	gr $\frac{1}{2}$ to 3	0.002 to 0.004 gram
& Creta	gr 1 to 5	0.03 to 0.2 gram
*Hydrastinæ Hydrochloridum	gr $\frac{1}{2}$ to 1	0.06 to 0.3 gram
*Hydrastinæ Hydro chloridum	gr $\frac{1}{2}$ to $\frac{1}{4}$	0.016 to 0.06 gram
Hyoscinæ Hydrobromidum	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.003 to 0.006 gram
*Hyoscyaminæ Sulphas	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.003 to 0.006 gram
Icthammol (Icthyol)	gr 5 to 10	0.3 to 0.6 gram
Indicarminum (subcutaneous or intramuscular ly)	gr $\frac{1}{2}$ to 1	0.016 to 0.06 gram
(nitrogenous ly)	gr $\frac{1}{4}$ to $\frac{1}{2}$	0.008 to 0.016 gram
Infusum Auranti Cone	dr $\frac{1}{2}$ to 1	2 c.c. to 4 c.c.
Recens	fl. oz. $\frac{1}{2}$ to 1	15 to 30 c.c.
Buchu Cone	dr 1 to 2	4 c.c. to 8 c.c.
Recens	fl. oz. 1 to 2	30 to 60 c.c.
Calumbæ Cone	dr $\frac{1}{2}$ to 1	2 to 4 c.c.
Recens	fl. oz. $\frac{1}{2}$ to 1	15 to 30 c.c.
Carophylli Cone	dr $\frac{1}{2}$ to 1	2 to 4 c.c.
Recens	fl. oz. $\frac{1}{2}$ to 1	15 to 30 c.c.
Digitalis Recens	dr $\frac{1}{2}$ to 5	6 to 20 c.c.
(single dose)	fl. oz. 1 to 4	30 to 120 c.c.
Gentianæ Co. Cone	dr $\frac{1}{2}$ to 1	2 to 4 c.c.
Recens	fl. oz. $\frac{1}{2}$ to 1	15 to 30 c.c.
Quassia Cone	dr $\frac{1}{2}$ to 1	2 to 4 c.c.
Recens	fl. oz. $\frac{1}{2}$ to 1	15 to 30 c.c.
Senegæ Cone	dr $\frac{1}{2}$ to 1	2 to 4 c.c.
Recens	fl. oz. $\frac{1}{2}$ to 1	15 to 30 c.c.
Sennæ Cone	dr $\frac{1}{2}$ to 2	2 to 8 c.c.
Recens	fl. oz. $\frac{1}{2}$ to 2	15 to 60 c.c.
Injectones B P —		
Bismuthi	m 8 to 15	0.5 to 1 c.c.
Salicyl	m 10 to 20	0.6 to 1.2 c.c.
Calcii Gluconatis	m 150 to 300	10 to 20 c.c.
Ferræ	m 15 to 30	1 to 2 c.c.
Hydrargyri	m 5 to 10	0.3 to 0.6 c.c.
Subchloridi	m 10 to 20	0.6 to 1.2 c.c.
Leptazol		
(subcutaneous ly)	m 8 to 15	0.5 to 1 c.c.
(nitrogenous ly)	m 10 to 75	2 to 5 c.c.
increasing to	m 180	or 1* c.c.

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	IMPERIAL	METRIC
Injections (continued)		
Mercalyl	m 8 to 30	0.5 to 2 c.c.
Nekethamid (Coramine)	m 15 to 60	1 to 4 c.c.
(intravenously as convulsant)	m 75 to 240	5 to 16 c.c.
Quinine et Urethane (intravenously)	m 8 to 75	0.5 to 5 c.c.
Sodium Morrhuate (intravenously)	m 8 to 75	0.5 to 5 c.c.
Insulinum B.P. dose	5 to 100 units	
Iodoformum	gr $\frac{1}{2}$ to 3	0.03 to 0.2 gram
Iodophthaleinum	gr $\frac{1}{2}$ to $\frac{1}{2}$ per lb up to gr 75	body weight
" (intravenously)	up to gr 45	
Iodoxylinum (Uroselectan B) (intravenously)	gr 150 to 225	10 to 15 grams
Ipecacuanha (expect.)	gr $\frac{1}{2}$ to 2	0.03 to 0.12 gram
Pulverata (emetic)	gr 15 to 30	1 to 2 grams
Jalapa Pulverata	gr 5 to 20	0.3 to 1.2 gram
* Jalapa Resina	gr 2 to 5	0.12 to 0.3 gram
Kaolinum	oz $\frac{1}{2}$ to 2	15 to 60 grams
Krameria	gr 10 to 30	0.6 to 2 grams
Leptazolium (Cardiazol)	gr $\frac{1}{2}$ to $1\frac{1}{2}$	0.5 to 0.1 gram
Liquor Adrenaline Hydroch.	m 2 to 8	0.12 to 0.5 c.c.
" Ammonii Acet. Dil.	dr 2 to 8	8 to 30 c.c.
" " " Fort.	mr 15 to 60	1 to 4 c.c.
" Arsenicalis (Fowler)	m 2 to 8	0.12 to 0.5 c.c.
* " Arsenici Hydrochlor	m 2 to 8	0.12 to 0.5 c.c.
" Arseni et Hydrarg.	m 5 to 15	0.5 to 1 c.c.
" Iodidi (Donovan)		
* " Bism. et Ammon. Cit.	dr $\frac{1}{2}$ to 1	2 to 4 c.c.
" Calciferolis (Prophylactic, daily for infant) 1000- 2000 units	m 5 to 10	0.3 to 0.6 c.c.
(Therapeutic, daily for infant) 2000-3000 units	m 10 to 15	0.6 to 1 c.c.
" Calcium Hydroxidi	fl oz 1 to 4	30 to 120 c.c.
* " Ferri Diallysatus	m 10 to 30	0.6 to 2 c.c.
" Ferri Perchloridi	m 5 to 15	0.3 to 1 c.c.
" Glycerilis Trinitratis	m $\frac{1}{2}$ to 2	0.03 to 0.12 c.c.
" Hydrarg. Perchlor.	dr $\frac{1}{2}$ to 1	2 to 4 c.c.
" Hydrogenii Peroxidi	dr $\frac{1}{2}$ to 2	2 to 8 c.c.
" Iodi Aquosus	m 5 to 15	0.3 to 1 c.c.
" " Mitis	m 5 to 30	0.3 to 2 c.c.
" " Simplex	m 3 to 15	0.2 to 1 c.c.
" Magnesium Bicarbonatis	fl oz 1 to 2	30 to 60 c.c.
* " Morphine Acetatis	m 5 to 30	0.3 to 2 c.c.
" " Hydrochlor.	m 5 to 30	0.3 to 2 c.c.
* " " Tartratis	m 5 to 30	0.3 to 2 c.c.
" Potassii Hydroxidi	m 10 to 30	0.6 to 2 c.c.
" Quinine Ammonias	dr $\frac{1}{2}$ to 1	2 to 4 c.c.

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	IMPERIAL	METRIC
Liquor Strychninae Hydrochlorici	m 3 to 12	0.2 to 0.8 c.c.
" Vitamin A Conc. (2500-12500 units)	m 1 to 5	0.6 to 0.3 c.c.
" Vitamin D Conc. (250-1500 units)	m $\frac{1}{2}$ to 3	0.03 to 0.2 c.c.
" Vitamin A et D Conc. (A = 2500-12500 units) (D = 250-1250 units)	m 1 to 5	0.6 to 0.3 c.c.
* Lithii Benzoas, Lithii Citras	gr 5 to 10	0.3 to 0.6 gram
" Carbonas	gr 2 to 5	0.12 to 0.3 gram
" Salicylas	gr 10 to 20	0.6 to 2 gram
Lobelia	gr 1 to 3	0.06 to 0.2 gram
Magnesi Carbonas, Leviss vel Pond	gr 10 to 60	0.6 to 4 grams
Magnesi Oxidum, Leviss Pond	gr 10 to 60	0.6 to 4 grams
" Sulphas	gr 20 to 240	2 to 16 grams
" Trisulcas	gr 5 to 30	0.3 to 2 grams
* Mangani et Ferri Citras	gr 3 to 10	0.2 to 0.6 gram
" Peroxidum	gr 2 to 10	0.13 to 0.6 gram
Nenthol	gr $\frac{1}{2}$ to 2	0.03 to 0.12 gram
Mepacrinæ Hydrochlorid (Atelrin)	gr $\frac{1}{2}$ to 1 $\frac{1}{2}$	0.08 to 0.1 gram
Methyl Salicylas	gr 5 to 15	0.3 to 1 c.c.
Methylsulphonat	gr 5 to 20	0.3 to 1.2 gram
Methylthionina Chloridum	gr 1 to 5	0.06 to 0.3 gram
Mist Magnesi Hydroxid	dr 1 to 4	4 to 16 c.c.
" Sennæ Co	fl oz 1 to 2	30 to 60 c.c.
* Morphinæ Acetas	gr $\frac{1}{2}$ to 1	0.008 to 0.02 gram
" Hydrochlorid	gr $\frac{1}{2}$ to 1	0.008 to 0.02 gram
" Sulphas	gr $\frac{1}{2}$ to 1	0.008 to 0.02 gram
" Tartras	gr $\frac{1}{2}$ to 1	0.008 to 0.02 gram
Mucilago Acacis	dr 1 to 4	4 to 16 c.c.
" Tragacanthæ	dr 1 to 4	4 to 16 c.c.
Myrristica	gr 5 to 10	0.3 to 0.6 gram
Myrrha	gr 5 to 15	0.3 to 1 gram
Neosarphenamina (intravenous)	gr 2 $\frac{1}{2}$ to 14	0.15 to 1 gram
Nikethamidum (Coramine) (intravenously)	gr 3 to 8 gr 8 to 20	0.2 to 0.5 gram 0.6 to 1.25 gram
Nux Vomica Pulverata	gr 1 to 4	0.06 to 0.25 gram
Oleum Amygdalæ	fl oz $\frac{1}{2}$ to 1	15 c.c. to 30 c.c.
" Anethi	oz 1 to 2	0.06 to 0.2 c.c.
" Anisi	oz 1 to 3	0.06 to 0.2 c.c.
" Arachis	fl oz $\frac{1}{2}$ to 1	15 to 30 c.c.
" Cajuputi	m 1 to 3	0.06 to 0.2 c.c.
" Cari	m 1 to 3	0.06 to 0.2 c.c.
" Caryophylli	m 1 to 3	0.06 to 0.2 c.c.
" Chenopodii	m 3 to 15	0.2 to 1 c.c.
" Cinnamomi	m 1 to 2	0.06 to 0.2 c.c.
" Coriandri	m 1 to 3	0.06 to 0.2 c.c.
* " Crotonis	m $\frac{1}{2}$ to 1	0.03 to 0.06 c.c.
" Eucalypti	m 1 to 3	0.06 to 0.2 c.c.

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*Oleum Gaultheriæ	yn 5 to 15	0.3 to 1 c.c.
" Hippoglossi (Halibut)	m 1 to 5	0.06 to 0.3 c.c.
(A = 1500-7500 units D = 3000 units approx)		
" Hydnocarpæ	m 5 to 15	0.3 to 1 c.c.
increasing gradually to m. 60		
* " Juniperi	m $\frac{1}{2}$ to 3	0.03 to 0.2 c.c.
" Lavandulæ	m 1 to 3	0.06 to 0.2 c.c.
" Limonis	m 1 to 3	0.06 to 0.2 c.c.
" Lini	fl. oz. $\frac{1}{2}$ to 1	15 to 30 c.c.
" Mentham Pip	m 1 to 3	0.06 to 0.2 c.c.
" Morrhue	dr $\frac{1}{2}$ to 2	2 to 8 c.c.
" Myristicæ	m 1 to 3	0.06 to 0.2 c.c.
" Olivæ	fl. oz. $\frac{1}{2}$ to 1	15 to 30 c.c.
" Ricini	dr 1 to 4	4 to 16 c.c.
" Santali	m 5 to 15	0.3 to 1 c.c.
Australiensis		
" Sesami	fl. oz. $\frac{1}{2}$ to 1	15 to 30 c.c.
" Terebinthine	m 3 to 10	0.2 to 0.6 c.c.
" (Anthehmintic)	m. 120 to 240	8 to 16 c.c.
" Vitaminatum		
(Prophylactic, A = 1000- 2000 units, D = 100-200 units)	m 15 to 30	1 to 2 c.c.
(Therapeutic, A = 3000- 6000 units, D = 300- 600 units)	m. 45 to 90	3 to 6 c.c.
Opium Pulveratum	gr $\frac{1}{2}$ to 3	0.03 to 0.2 gram
Orthocaine	gr $1\frac{1}{2}$ to 3	0.1 to 0.2 gram
Oxymel	dr $\frac{1}{2}$ to 2	2 to 8 c.c.
" Scillæ	dr $\frac{1}{2}$ to 1	2 to 4 c.c.
Pamaquimum	gr $\frac{1}{2}$ to $\frac{1}{2}$	0.02 to 0.04 gram
Pancreatinum	gr 3 to 10	0.2 to 0.6 gram
Paraffinum Liquidum	dr 2 to 8	7.5 to 30 c.c.
Paraldehydum	dr $\frac{1}{2}$ to 2	2 to 8 c.c.
Pelletierinæ Tannas	gr 2 to 8	0.12 to 0.5 gram
Pepsinum	gr 5 to 10	0.3 to 0.6 gram
Phenitronum (Prominal)	gr $\frac{1}{2}$ to 6	0.03 to 0.4 gram
Phenacetinum	gr 5 to 10	0.3 to 0.6 gram
Phenazonum	gr 5 to 10	0.3 to 0.6 gram
Phenobarbitonum	gr $\frac{1}{2}$ to 2	0.03 to 0.12 gram
" Soluble	gr $\frac{1}{2}$ to 2	0.03 to 0.12 gram
Phenol	gr 1 to 3	0.06 to 0.2 gram
" Liquefactum	m 1 to 3	0.06 to 0.2 c.c.
Phenolphthaleinum	gr 1 to 5	0.06 to 0.3 gram
*Phosphorus	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.006 to 0.0025 gram
Physostigmatis Salicylas	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.006 to 0.0012 gram
" Sulphas	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.006 to 0.0012 gram
*Picrotoxinum	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.006 to 0.0025 gram
Pilocarpinæ Nitræs	gr $\frac{1}{16}$ to $\frac{1}{8}$	0.003 to 0.012 gram
Pil Aloes	gr 4 to 8	0.25 to 0.5 gram
" et Asafoetidæ	gr 4 to 8	0.25 to 0.5 gram
" et Ferri	gr 4 to 8	0.25 to 0.5 gram

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	IMPERIAL	METRIC
*Pul Colocyntidis Comp	gr 4 to 8	0.26 to 0.5 gram
" " et Hyoscyami	gr 4 to 8	0.25 to 0.5 gram
" Ferri Carbonatis	gr 5 to 30	0.3 to 2 gram
" Hydrargyri	gr 4 to 8	0.25 to 0.5 gram
" Rhei Comp	gr 4 to 8	0.25 to 0.5 gram
* " Saponis Co (6 Opio)	gr 2 to 4	0.12 to 0.25 gram
Plumbi Acetas	gr ½ to 2	0.03 to 0.12 gram
Podophylli Resina	gr ½ to 1	0.015 to 0.00 gram
Potassi Acetas	gr 15 to 60	1 to 4 grams
" Bicarbonas	gr 15 to 60	1 to 4 grams
" Bromidum	gr 5 to 30	0.3 to 2 grams
" Carbonas	gr 2 to 5	0.12 to 0.3 gram
" Chloras	gr 5 to 10	0.3 to 0.6 gram
" Citras	gr 15 to 60	1 to 4 grams
" Hypophosphis	gr 3 to 10	0.2 to 0.6 gram
" Iodidum	gr 5 to 30	0.3 to 2 grams
" Permanganas	gr 1 to 3	0.06 to 0.2 gram
* " Tartros	gr 30 to 210	2 to 16 grams
" Tartros Acidus	gr 15 to 60	1 to 4 grams
Procainæ Hydrochloridum	gr ½ to 2	0.03 to 0.12 gram
(subcutaneously)	up to gr 15	1 gram
(intrathecally)	up to gr 2½	0.16 gram
Prunus Serotina	gr 15 to 30	1 to 2 grams
*Pulvis Antimonialis	gr 3 to 6	0.2 to 0.4 gram
* " Catechu Comp	gr 10 to 60	0.6 to 4 grams
* " Cinnamomi Comp	gr 10 to 60	0.6 to 4 grams
" Creta Aromaticus	gr 10 to 60	0.6 to 4 grams
" " Aromaticus & Opio	gr 10 to 60	0.6 to 4 grams
" Glycyrrh Comp	gr 60 to 120	4 to 8 grams
" Ipecacuanæ et Opio	gr 5 to 10	0.3 to 0.6 gram
" Jalapa Comp	gr 10 to 60	0.6 to 4 grams
" Rii Comp	gr 10 to 60	0.6 to 4 grams
" Tragacontæ Co	gr 10 to 60	0.6 to 4 grams
Quassia	gr 2 to 5	0.12 to 0.5 gram
Quileia	gr 1 to 3	0.08 to 0.2 gram
Quinidina Sulphas	gr 3 to 10	0.2 to 0.6 gram
*Quinina Acetyl-salicylas	gr 1 to 5	0.06 to 0.3 gram
" Bisulphas	gr 1 to 10	0.06 to 0.6 gram
" Dihydrochloridum	gr 1 to 10	0.06 to 0.6 gram
(intravenous, or		
intramuscularly)	gr 5 to 10	0.3 to 0.6 gram
" et Aethylis		
Carbonas	gr 1½ to 15	0.1 to 1 gram
" Hydrobromidum	gr 1 to 10	0.06 to 0.6 gram
" Hydrochloridum	gr 1 to 10	0.06 to 0.6 gram
* " Hypophosphis	gr 1 to 5	0.06 to 0.3 gram
" Iactas	gr 1 to 5	0.06 to 0.3 gram
* " Salicylas	gr 1 to 5	0.06 to 0.3 gram
" Sulphas	gr 1 to 10	0.06 to 0.6 gram
" Tannas	gr 1½ to 15	0.1 to 1 gram
* " Valerianas	gr 1 to 3	0.06 to 0.2 gram
Resorcinol	gr 1 to 5	0.06 to 0.3 gram
Rheum	gr 3 to 15	0.2 to 1 gram

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	IMPERIAL	METRIC
Saccharinum Solubile	gr. $\frac{1}{2}$ to 2	0.03 to 0.12 gram
Salicinum	gr. 5 to 15	0.3 to 1 gram
*Salol	gr. 5 to 20	0.3 to 1.2 gram
Santonium	gr. 1 to 3	0.06 to 0.2 gram
*Scammonæ Resina	gr. $\frac{1}{2}$ to 3	0.03 to 0.2 gram
Scilla	gr. 1 to 3	0.06 to 0.2 gram
Scopolamina (<i>see</i> Hyoscina)		
Senega	gr. 6 to 12	0.4 to 0.8 gram
Sennæ Folium	gr. 16 to 30	0.6 to 2 grams
Sennæ Fructus	gr. 10 to 30	0.6 to 2 grams
Serpentaria	gr. $\frac{1}{2}$ to 1½	0.05 to 0.1 gram
*Sodii Arsenas Anhydrous	gr. $\frac{1}{10}$ to $\frac{1}{4}$	0.0015 to 0.006 gram
" Benzoes	gr. 5 to 30	0.3 to 2 grams
" Bicarbonas	gr. 15 to 60	1 to 4 gram
" Bromidum	gr. 5 to 30	0.3 to 2 grams
" Carbonas	gr. 5 to 15	0.3 to 1 gram
" " Exsiccatus	gr. 2 to 5	0.12 to 0.3 gram
" Citras	gr. 15 to 60	1 to 4 grams
" " et Potasii Tartaras	gr. 120 to 240	8 to 16 grams
" Glycerophosphas	gr. 5 to 10	0.3 to 0.6 gram
" Hypophosphis	gr. 3 to 10	0.2 to 0.6 gram
" Iodidum	gr. 5 to 30	0.3 to 2 grams
" Nitras	gr. $\frac{1}{2}$ to 2	0.03 to 0.12 gram
" Phosphas	gr. 30 to 240	2 to 16 grams
" " Acidus	gr. 30 to 60	2 to 4 grams
" " Effervesceus	gr. 60 to 240	4 to 16 grams
" Salicylas	gr. 10 to 30	0.6 to 2 grams
" Sulphas	gr. 30 to 240	2 to 16 grams
" " Effervesceus	gr. 60 to 240	4 to 16 grams
" " Exsicc	gr. 15 to 120	1 to 8 grams
" Sulphur	gr. 5 to 20	0.3 to 1.2 gram
" Sulphocarbolas	gr. 5 to 15	0.3 to 1 gram
" Thio Sulphas (<i>subcutaneously, intramuscularly or intravenously</i>)	gr. 5 to 15	0.3 to 1.0 gram
*Sparteine Sulphas (<i>orally</i>)	gr. 1 to 2	0.06 to 0.13 gram
Spiritus Ætheris	m. 15 to 60	1 to 4 c c.
" Ætheris Nitras	m. 15 to 60	1 to 4 c c.
" Ammon. Arom.	m. 15 to 60	1 to 4 c c.
" Cajuputi	m. 5 to 30	0.3 to 2 c c.
" Camphore	m. 5 to 30	0.3 to 2 c c.
" Chloroformi	m. 5 to 30	0.3 to 2 c c.
" Menthe Pipente	m. 5 to 30	0.3 to 2 c c.
Stibophenum (Fowadin)	gr. 1½ to 5	0.1 to 0.3 gram
Strophanthinum (<i>intramuscularly or intravenously</i>)	gr. $\frac{1}{15}$ to $\frac{1}{4}$	0.0025 to 0.001 gram
Strychnina Hydrochlor.	gr. $\frac{1}{4}$ to $\frac{1}{2}$	0.002 to 0.008 gram
Styrax	gr. 10 to 30	0.6 to 2 grams
Sulphanilamidum	gr. 8 to 15	0.5 to 1 gram
Sulphathienamina (<i>subcutaneously or intramuscularly</i>)	gr. 1½ to 10	0.1 to 0.6 gram
Sulphathiazolum	gr. 15 to 60	1 to 4 grams
Sulphonol	gr. 5 to 20	0.3 to 1.2 gram

* These preparations are non-official.

	IMPERIAL	METRIC
Sulphur Præ p vel Subl m	gr 15 to 60	1 to 4 grams
Suram num (Gortmarum)		
(intravenously)	gr 15 to 45	1 to 3 grams
Syrupus Aurent	dr 1 to 2	2 to 8 cc
* Code mæ Phosphat s	dr 1 to 2	2 to 8 cc
Ferræ Iod d	dr 1 to 2	2 to 8 cc
Phosphat s Co	dr 1 to 2	2 to 8 cc
Phosph s		
Qu n ot Strych (Laaton) j	dr 1 to 1	2 to 4 cc
Limon s	dr 1 to 2	2 to 8 cc
Pruni Serot mæ	dr 1 to 2	2 to 8 cc
So im	dr 1 to 1	2 to 4 cc
Sennæ	dr 1 to 2	2 to 8 cc
Tolutanus	dr 1 to 2	2 to 8 cc
Zinc beris	dr 1 to 2	2 to 8 cc
Tabellæ Glyceryl s Trinitrat s	1 to 2 Tablets	
	1 tablet = gr 1/2	0.0005 gram
Terebentum	m 5 to 15	0.3 to 1 cc
Theobrom næ et Sodæ Sal		
oylæ	gr 10 to 20	0.5 to 1.2 gram
Theophyllinæ et Sodæ Acetæ	gr 2 to 5	0.12 to 0.3 gram
Thymol	gr 1 to 2	0.3 to 0.12 gram
(antihelm nt c)	gr 15 to 30	1 to 2 grams
Thyro drum	gr 1 to 5	0.03 to 0.3 gram
Thyrox need um	gr 1/16 to 1/8	0.0001 to 0.001 gram
Tinctura Asafætidæ	dr 1 to 1	2 to 4 cc
Au ant	dr 1 to 1	2 to 4 cc
Belladonnæ	m 5 to 30	0.3 to 2 cc
Benzoin Co	dr 1 to 1	2 to 4 cc
Calumbæ	dr 1 to 1	2 to 4 cc
Caps c	m 5 to 15	0.3 to 1 cc
Cardiomom Co	dr 1 to 1	2 to 4 cc
Catechu	dr 1 to 1	2 to 4 cc
Cinchonæ	dr 1 to 1	2 to 4 cc
Cinchonæ Comp	dr 1 to 1	2 to 4 cc
Cocæ	m 5 to 15	0.3 to 1 cc
Colic c	m 5 to 15	0.3 to 1 cc
Digital s	m 5 to 15	0.3 to 1 cc
(s nglic)	m 20 to 90	2 to 8 cc
* Gelsemu	m 5 to 15	0.3 to 1 cc
Gent anæ Co	dr 1 to 1	2 to 4 cc
* Quæ se Ammon	dr 1 to 1	2 to 4 cc
* Hamamel dis	dr 1 to 1	2 to 4 cc
* Hydrast s	dr 1 to 1	2 to 4 cc
Hyoscyam	dr 1 to 1	2 to 4 cc
Ipecacuanhæ	m 10 to 30	0.5 to 2 cc
(emet c)	oz 1 to 1	15 to 30 cc
Krameriz	dr 1 to 1	2 to 4 cc
Limon s	dr 1 to 1	2 to 4 cc
Lobæ æ Etheræ	m 5 to 15	0.3 to 1 cc
Myrrhæ	dr 1 to 1	2 to 4 cc
Nuæ Vom æ	m 10 to 30	0.5 to 2 cc
Op	m 5 to 30	0.3 to 2 cc

* These preparations are non-official

	IMPERIAL	METRIC
Tinctura Opi Camphorata	dr. $\frac{1}{2}$ to 1	2 to 4 c c.
" Quassia . . .	dr. $\frac{1}{2}$ to 1	2 to 4 c c
" Quillaia . . .	dr. $\frac{1}{2}$ to 1	2 to 4 c c
* " Quinina . . .	dr. $\frac{1}{2}$ to 1	2 to 4 c c
" Rhei Comp . . .	dr. $\frac{1}{2}$ to 1	2 to 4 c c
" Scilla . . .	m 5 to 30	0.3 to 2 c c.
" Senega . . .	dr $\frac{1}{2}$ to 1	2 to 4 c c
" Stramonii . . .	m 5 to 30	0.3 to 2 c c
" Strophanthi . .	m. 2 to 5	0.12 to 0.3 c c
" Tolutana . . .	dr $\frac{1}{2}$ to 1	2 to 4 c c
" Valerianæ Ammon.	dr $\frac{1}{2}$ to 1	2 to 4 c c
" Zingiberis Mitis .	dr. $\frac{1}{2}$ to 1	2 to 4 c c
" " Fortis	m. 5 to 10	0.3 to 0.6 c c.
Totaquina . . .	gr 1 to 10	0.06 to 0.0 gram
Trinitrophenol (Picric acid)	gr. 1 to 5	0.06 to 0.3 gram
Trypanamidum (subcutaneous- ly, intramuscularly or intravenously) . .	gr 15 to 30	1 to 2 grains
Urea . . .	gr 15 to 240	1 to 16 grams
Urethanum . . .	gr 15 to 30	1 to 2 grams
Valeriana . . .	gr 5 to 15	0.3 to 1 gram
* Vinum Antimoniale (expect orant)	m 10 to 30	0.6 to 2 c c
" " (emetic)	dr 2 to 4	8 to 16 c c
* Zinci Acetas . . .	gr 1 to 2	0.06 to 0.12 gram
" Oxidum . . .	gr 5 to 10	0.3 to 0.6 gram
" Sulphas . . .	gr 1 to 3	0.06 to 0.2 gram
" " (emetic) . . .	gr. 10 to 30	0.6 to 2 gram
* " Valerianæ . . .	gr. 1 to 3	0.06 to 0.2 gram
Ziniber . . .	gr 5 to 15	0.3 to 1 gram

* These preparations are non-official.

DOSES PROPORTIONATE TO AGE

AGE		DOSE	
1 month	.	$\frac{1}{25}$ of adult dose	
3 to 6 months	.	$\frac{1}{15}$ to $\frac{1}{10}$	" "
9 to 12 "	.	$\frac{1}{12}$ to $\frac{1}{8}$	" "
1 to 2 years	.	$\frac{1}{10}$ to $\frac{1}{6}$	" "
2 to 4 "	.	$\frac{1}{8}$ to $\frac{1}{4}$	" "
4 to 6 "	.	$\frac{1}{6}$ to $\frac{1}{3}$	" "
6 to 8 "	.	$\frac{1}{4}$ to $\frac{1}{2}$	" "
8 to 12 "	.	$\frac{1}{3}$ to $\frac{2}{3}$	" "
12 to 14 "	.	$\frac{1}{2}$ to $\frac{3}{4}$	" "
14 to 18 "	.	$\frac{2}{3}$ to $\frac{3}{4}$	" "
18 to 60 "	.	1	" "
60 to 90 "	.	$\frac{2}{3}$ to $\frac{3}{4}$	" "

The above table gives an approximate estimate of doses for particular ages, but the general condition and weight of the patient must always be taken into consideration in addition.

N B—For children the doses of aperients, belladonna, hyoscyamus and arsenic may be somewhat increased, but opium and narcotics, which they tolerate badly, must be reduced.

According to Young's formula, the dose for children less than 12 years old may be obtained by dividing the age by the age plus twelve, e.g., for a child six years old

$$6 \div 6 + 12 = \frac{1}{2}$$

WEIGHTS AND MEASURES

AVOIRDUPOIS WEIGHT

16 drams	= 1 ounce (oz)	= 437 5 grains
16 ounces	= 1 pound (lb.)	= 7000 grains
14 pounds	= 1 stone (st)	
28 pounds	= 1 quarter (qr)	
4 quarters	= 1 hundredweight (cwt)	= 112 lb
20 cwt	= 1 ton	= 2,240 lb

APOTHECARIES WEIGHT

20 grains	= 1 scruple (ʒ)	
3 scruples	= 1 drachm (ʒi)	= 60 grains
8 drachms	= 1 ounce (ʒi)	= 480 grains

APOTHECARIES FLUID MEASURES

60 minims	= 1 fluid drachm	
8 fluid drachms	= 1 fluid ounce	= 480 minims
20 fluid ounces	= 1 pint	= 160 drachms = 9,600 minims
2 pints	= 1 quart	
4 quarts	= 1 gallon	= 160 ounces = 1,280 drachms

METRIC WEIGHTS

10 milligrams	= 1 centigram	= 0.154 grains
10 centigrams	= 1 decigram	= 1.543 "
10 decigrams	= 1 gram	= 15.432 "
10 grams	= 1 decagram	= 0.3527 oz av
10 decagrams	= 1 hectogram	= 3.5274 "
10 hectograms	= 1 kilogram (kilo)	= 2.2046 lb

METRIC VOLUME OR CAPACITY

10 centimils	= 1 decimal	= 1.6894 minims
10 decimils	= 1 mil (c c)	= 16.8941 minims
10 mils (c c)	= 1 centilitre	= 2.8157 fl drachms
100 mils (c.c.)	= 1 decilitre	= 3.5196 fl oz.
1000 mils (c c)	= 1 litre	= 1.7593 pints

Approximate Equivalents

WEIGHTS—IMPERIAL TO METRIC

Gr	Gram	Gr	Gram	Gr	Gram
10^{-1} gr =	0.000065	$\frac{1}{2}$ =	0.016	20 =	1.29
10^{-2} gr =	0.00032	$\frac{1}{4}$ =	0.021	30 =	2.0
10^{-3} gr =	0.0006	$\frac{1}{8}$ =	0.032	45 =	3.0
$\frac{1}{16}$ gr =	0.001	$\frac{1}{16}$ =	0.049	60 =	3.9
$\frac{1}{32}$ gr =	0.0013	1 =	0.065	90 =	6.0
$\frac{1}{64}$ gr =	0.0015	$1\frac{1}{2}$ =	0.1	120 =	7.8
$\frac{1}{128}$ gr =	0.002	2 =	0.13	150 =	10.0
$\frac{1}{256}$ gr =	0.0025	3 =	0.2	180 =	12.0
$\frac{1}{512}$ gr =	0.003	4 =	0.26		
$\frac{1}{1024}$ gr =	0.004	5 =	0.3	$\frac{1}{2}$ ounce (av) =	15.0
$\frac{1}{2048}$ gr =	0.004	6 =	0.4	1 ounce (av) =	30.0
$\frac{1}{4096}$ gr =	0.0065	8 =	0.5	(or nearer 28.35)	
$\frac{1}{8192}$ gr =	0.008	10 =	0.65	1 pound =	453.59
$\frac{1}{16384}$ gr =	0.011	12 =	0.8		
$\frac{1}{32768}$ gr =	0.013	15 =	1.0		

MEASURES—IMPERIAL TO METRIC

Minims c.c.	Minims c.c.	Fluid oz.	c.c.
$\frac{1}{2}$ = 0.03	15 = 0.9	1 =	30.0
1 = 0.06	20 = 1.2	2 =	60.0
2 = 0.12	25 = 1.5	4 =	115.0
3 = 0.18	30 = 1.8	6 =	140.0
4 = 0.24	40 = 2.5	8 =	160.0
5 = 0.3	45 = 3.0	10 =	230.0
6 = 0.35	60 = 3.5	20 =	280.0
8 = 0.47	90 = 5.3		
10 = 0.6	120 = 7.1	Gallon	Litres
12 = 0.71	240 = 14.2	1 =	4.536

DOMESTIC MEASURES

- 1 teaspoonful is just over a fluid drachm or 5 c.c.
 1 dessertspoonful is about two fluid drachms
 1 tablespoonful is about half a fluid ounce or 15 c.c.
 1 teacupful is about five fluid ounces
 1 tumbl'rful is about ten fluid ounces or about half a pint

Conversion of Metric and Imperial Measures

WEIGHTS

Grains	×	0.0648	=	grams
Grams	×	15.432	=	grains
Grams	×	0.0322	=	$\bar{3}$ _i (apoth)
Grams	×	0.0353	=	oz. (avor)
Kilograms	×	2.2046	=	lbs. (avor)
Drachms ($\bar{3}$ _i)	×	3.8879	=	grams.
Ounce ($\bar{3}$ _i)	×	31.1035	=	grams
Ounce (avor)	×	28.3495	=	grams.
Pounds	×	0.4536	=	kilos

FLUID MEASURE

Mils (c c)	×	16.8941	=	minims
Mils (c c)	×	0.2316	=	fl drachms
Mils (c c)	×	0.0352	=	fl oz
Litres	×	35.1960	=	fl oz
Litres	×	1.7598	=	pints
Litres	×	0.2199	=	gallons
Minims	×	0.0592	=	Mils (c c.)
Fl drachms	×	3.5516	=	Mils (c c)
Fl oz	×	28.4123	=	Mils (c c)
Fl oz	×	0.0234	=	Litres
Pints	×	0.5682	=	Litres
Gallons	×	4.5459	=	Litres

U S.A. Liquid Measure

The minim, fluid drachm and fluid ounce of the British (Imperial) measure are slightly smaller than the corresponding measures in the U.S. Apothecaries Measure, but 16 ounces = 1 pint in U.S. measure instead of 20 ounces = 1 pint in Imperial, and therefore the British (Imperial) pint, quart and gallon are considerably larger than the corresponding U.S. measures.

To convert U.S. minims, fluid drachms or fluid ounces in British (Imperial) measure, multiply by 1.0406. To convert the British measure into U.S. measure, multiply by 0.9609.

To convert U.S. pints, quarts or gallons into British (Imperial) measure, multiply by 0.8325. To convert the British measure into U.S. measure, multiply by 1.2011.

CALORIE VALUE OF VARIOUS FOODSTUFFS

	Grams per Ounce Foodstuff			Calories per Ounce
	Carbo- hydrate	Prote- in	Fat	
<i>Miscellaneous</i>				
Alcohol	—	—	—	7
Bacon	0	4	18.5	181
Beef	0	8	6	86
Bread	14	2.5	0.5	70
Butter	0	0	25	225
Cheese (Cheddar)	1	8	10	134
Cheese (Dutch)	0	10	5	90
Chicken	0	6.5	4.5	65
Chocolate (milk)	15	2	10	160
Cream (40%)	1	1	12	120
Cream (20%)	1	1	6	65
Egg (1 = 2 oz.)	0	6	6	78
Fish	0	6	0	24
Ham	0	4	9.5	104
Macaroni	21	4	0	97
Milk	15	1	1	20
Mutton (cooked)	0	7	0.4	60
Oil or Lard	0	0	23	252
Sugar	28	0	0	112
<i>Cereals</i>				
Barley	24	2.4	0.3	103
Beans (Haricot)	16	7	0.5	85
Cornflour	20	1.8	1.2	104
Oatmeal	20	4.5	2	116
Peas (dried)	17.4	7	0	100
Rice	21	2.3	0	100
Sago	24	0	0	96
Tapioca	24	0	0	96
<i>Vegetables</i>				
Asparagus	1	0.5	0	7
Beetroot	3	0.5	0	14
Cabbage	1.3	0.4	0.1	9
Carrots	3	0.3	0	13

	Grams per Ounce Foodstuff.			Calories per Ounce
	Carbo hydrate	Protein	Fat	
Cauliflower . . .	14	05	02	9
Celery . . .	1	03	0	5
Lettuce . . .	08	03	01	6
Mushrooms . . .	2	1	01	13
Onions . . .	3	04	0	14
Parsnips . . .	4	04	0	18
Potatoes . . .	6	1	0	30
Radishes . . .	17	03	0	9
Rhubarb . . .	1	02	0	6
Spinach . . .	1	06	01	7
Tomatoes . . .	1	02	0	6
Turnips . . .	23	03	0	12
<i>Fruits.</i>				
Apples . . .	4	01	02	18
Bananas . . .	6	04	02	29
Blackberries . . .	33	04	03	17
Cherries . . .	45	03	02	23
Dates . . .	223	06	08	101
Figs (dried) . . .	212	12	01	92
Grapes . . .	54	03	04	28
Grapefruit (half) . . .	10	0	0	40
Melon . . .	2	01	0	9
Oranges (1 = 2 oz.) . . .	10	0	0	40
Pears . . .	4	02	0	18
Pineapple . . .	3	01	01	13
Plums . . .	6	03	0	25
Prunes . . .	21	06	0	86
Raspberries . . .	36	05	03	10
Strawberries . . .	2	03	0	18

Calorie Requirement, etc.

1 gram of protein = 4 calories, 1 gram of carbohydrate = 4 calories; 1 gram of fat = 9 calories.

A patient at rest requires 25 calories per kilo (2.2 lb) of body-weight.

VITAMIN CONTENT OF COMMON FOODS

Food	A	B	C	D	E
Apple	+	+	++		-
Banana	+	+	++	-	++
Bread		+	-	-	-
Butter	++	-	-	++	++
Cabbage (lightly cooked)	+		+		-
Carrot (raw)	++	++	+	-	-
Cauliflower (cooked)	-	-	++		-
Cream	+	-	++	+	-
Egg	++	+	-	++	-
Lemon	+		++	-	-
Lettuce	++	+	+++		+++
Liver	++	++			++
Milk					
Unboiled	+	+	+	+	+
Dried	+		0 to +	0 to +	-
Condensed	+	+	+		
Orange	+		++		+
Pea	++		+++	-	-
Potato	+	-	+	-	
Tomato (raw)	++	+	+++	-	-

APPROXIMATE TIME FOR DIGESTION OF FOODS

	Hours		Hours
Pork roasted	5	Mutton roasted	3 to 3½
Veal	4½	boiled	3
Wheaten Bread	3 to 4	Poultry boiled or	
Apples	3 4	roasted	2½ 4
Beef boiled	3	Potatoes	2½ 3½
roasted	3 4	Ham boiled	2 3
Cabbage carrots or		Oysters ra	2
turnips	3 4	Milk	2
Cheese	3 4	Fish boiled	1½ 2½
Eggs fried or boiled		Rice sago tapioca	1 2
hard	3 3½	Tape	1
Eggs raw	2		

OBSTETRIC TABLE

The calculation is made from the first day of the last menstrual period

January October	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	6 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5 6 7
February November	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28	6 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5
March December	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	6 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4 5
April January	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	6 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4
May February	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	6 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4
June March	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	6 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4
July April	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	6 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4
August May	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	6 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4
September June	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	6 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4
October July	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	6 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4
November August	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	6 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4
December September	1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30	6 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31	1 2 3 4

AVERAGE HEIGHTS AND WEIGHTS

TABLE 1.—AVERAGE WEIGHT OF THE HEALTHY MALE CHILD DURING THE FIRST YEAR OF LIFE

	lb		lb
At birth	6½ to 7½	At eight months	14½ to 17½
At one month	7½ „ 8½	At nine months	15½ „ 18½
At two months	8½ „ 10½	At ten months	16½ „ 19½
At three months	9½ „ 12½	At eleven months	17½ „ 20
At four months (a)	10½ „ 14	At twelve months	
At five months (a)	11½ „ 15	(b)	18½ „ 22
At six months	12½ „ 16	At eighteen months	20
At seven months	13½ „ 17		

(a) Double birth weight

(b) Treble birth weight

TABLE 2 AVERAGE WEIGHT OF CHILDREN

Age Last Birthday	Weight		Height	
	st	lb	inches	
2	2	2	29-34	
3	2	6	31-37½	
4	2	10	33-40	

	Male		Female		Male		Female	
	st	lb	st	lb	ft	in.	ft	in.
6	2	12	2	11	3	4	3	3
6	3	2½	2	13½	3	7	3	6
7	3	7½	3	5½	3	10	3	8
8	3	13	3	10	3	11	3	10½
9	4	4½	3	13½	4	1½	4	0½
10	4	11½	4	6	4	3½	4	3
11	5	2	4	12	4	5½	4	5
12	5	6½	5	6½	4	7	4	7½
13	5	12½	6	3	4	9	4	9½
14	6	8	6	12½	4	11½	4	11½
15	7	4½	7	8½	5	2½	5	1
16	8	7	8	1	5	4½	5	1½

TABLE 3 — AVERAGE WEIGHT FOR HEIGHT OF A MAN OF THIRTY, DRESSED

The weight tends in middle life to increase with age

Height			Weight		Chest Circumference	
ft	in.	cms	st	lb	kgm	inches
5	0	152	8	0	50.80	33
5	1	155	8	4	52.62	34
5	2	157	9	0	57.15	35
5	3	160	9	7	60.33	35
5	4	162	9	13	63.05	36
5	5	165	10	2	64.41	37
5	6	167	10	5	65.77	37½
5	7	170	10	8	67.13	38
5	8	173	11	1	70.31	38½
5	9	175	11	8	73.48	39
5	10	178	12	1	76.66	39½
5	11	180	12	6	78.93	40
6	0	183	12	10	80.74	40½
6	1	185	13	0	82.56	41

Up to about 5 ft 7 in women tend to weigh less for their height than men. Above this height they weigh usually as much or more and in late middle life not uncommonly very much more.

AVERAGE WEIGHTS AND MEASUREMENTS OF ADULT HUMAN ORGANS

BRAIN—Weight male 50 ounces female 44 ounces

HEART—Weight male 10 to 12 ounces female 8 to 10 ounces

Measurements 5 inches long 3½ inches broad 2½ inches thick.

KIDNEY—Weight 4½ to 5½ ounces Measurements 4 inches long 2½ inches broad 1½ inches thick.

LIVER—Weight 45 to 60 ounces Measurements transverse 10 to 12 inches, antero-posterior 6 to 7 inches

LUNG—Weight right, 23 ounces, left 19 ounces (Variable)

PANCREAS—Weight 3 ounces. Measurements 6 to 8 inches long 1½ inches broad

SPLEEN—Weight 5 to 7 ounces Measurements 5 inches long 3 inches broad 1½ inches thick.

STOMACH—Weight 4½ to 5 ounces Measurements 10 to 12 inches long 4 to 5 inches wide

NORMAL FIGURES FOR CONSTITUENTS OF THE BLOOD

Expressed in mgm per 100 c c (unless otherwise stated) of serum or plasma.

Albumin	24-67%
Alkali reserve	53-77 vols of $\text{GO}_2\%$
*Bromide, as NaBr	Up to 20 mgm per 100 c c.
Calcium	9-11 mgm per 100 c c
Chloride	
As NaCl	560-620 " " "
As Chlorine	340-380 " " "
Cholesterol	100-200 " " "
Creatinine	1-1.5 " " "
Globulin	12-22%
Magnesium	14-25 mgm per 100 c c
Nitrogen (non protein)	20-40 " " "
Phosphate (inorganic as phosphorus)	3-5 " " "
Potassium	18-21 " " "
Protein (total)	68-86%
Sodium	320 mgm per 100 c c
Sugar (fasting)	80-120 " " "
Urea	20-40 " " "
Uric acid	20-35 " " "

*A patient taking bromide = 180 mgm per 100 c c, symptoms of bromide intoxication may appear above this level

COLLECTION OF SPECIMENS FOR BLOOD EXAMINATION

(5-10 c c. of blood usually necessary)

<i>Plain tube</i>	<i>Fluoride or Fluoride + Oxalate</i>
Calcium	Sugar
Protein	
Urea (if at least 10 c c. of blood)	<i>Citrate</i>
Wassermann	Phosphates
Widal	<i>Under Liq. Paraffin</i>
	Magnesium
<i>Oxalate tube</i>	Potassium
Cholesterol	Sodium
Creatinine	
Urea	
Uric acid	
Van den Bergh	

GLUCOSE TOLERANCE TEST

Blood Sugar (mgm per 100 c c)

	Before Glucose	$\frac{1}{2}$ hour after	1 hour after	1 $\frac{1}{2}$ hours after	2 hours after
50 grams of Glucose					
Normal	100	120	130	110	100
Mild Diabetes	170	190	200	190	180
Severe Diabetes	240	270	290	300	310
Renal glycosuria (leaky kidney)	95	100	90	90	95

LEVULOSE TOLERANCE TEST

In a normal individual there is little or no rise in the blood sugar taken 1 hour after 50 grams of Levulose

In hepatic insufficiency, the blood sugar will show an increase of 30 mgm per 100 c c in the first half hourly specimen, and may subsequently rise to 140 or 180 mgm per 100 c c

UREA CONCENTRATION TEST

No fluid is given for several hours, the bladder is then emptied and 15 grams of urea dissolved in 100 c c of water are taken. Three specimens of urine are collected at intervals of an hour. If the kidneys are functioning normally the first specimen should contain not less than 15% and the second and third hourly specimens not less than 2% of urea as estimated by the hypobromite method.

DENTITION TABLE

Milk Teeth—The first dentition begins at the sixth or seventh month and is completed by about the second year.

Central incisors (1) lower	6th to 9th month
" " (2) upper	7th " 10th "
Lateral incisors (1) upper	9th " 11th "
" " (2) lower	10th " 14th "
First molars	12th " 15th "
Canines	17th " 24th "
Second molars	2nd to 3rd year

The full primary dentition is 20 teeth, 10 in each jaw.

Permanent Teeth—These appear between the 6th and 13th years except the third molars (wisdom) which may appear at 17 or later. The full permanent dentition is 32 teeth, 16 in each jaw.

CEREBROSPINAL FLUID

Disease.	Colour	Pressure	Cells per cu. mm.	Protein. %	Sugar %	Chlorides %	Colloidal Gold (Lange)	C.S.F. (Wassermann)
Normal	Clear colourless	50-150 mm of C.S.F.	0-3 Lymph	0.02-0.04 [20-40 mg]	0.05 to 0.08	0.72 to 0.75	0000000000 0000110000	-ve
Tuberculous Meningitis	Colourless Spider web clot on standing	+	+ 10-400 Lymph or mixed	++ up to 0.3-0.3	-	- below 0.65	0000234532 (Meningitic Curve)	-ve
Cerebrospinal (Meningococcal) Meningitis	Hazy Turbid or Purulent	++	+++ 10-2000 Polymorph	++ up to 0.3-0.3	- or absent	- 0.65-0.7	0000234532	-ve
Pneumococcal or Streptococcal Meningitis	Hazy, Turbid or Purulent	++	+++ 10-2000 Polymorph	++ up to 0.3-0.3	- or absent	- 0.65-0.7	0000234532	-ve
Acute Polymyelitis	Clear colourless	Normal or Slight +	+ (Early Stages) Mixed	+ up to 0.1	Normal	Normal	0000123210	-ve
Encephalitis Lethargica	"	+	+ 5-50 Lymph	Normal or Slight +	"	"	0000110000 0132200000	-ve

Disseminated Sclerosis	"	Normal	Normal or Slight +	Normal or Slight +	"	Variable, e.g. 0123210000	+ -ve
Tabs Dorsalis	"	Normal	+ 10-80 Lymph	Normal or Slight + 0.03-0.08	"	(Laotic Curve) 0244210000	+ve 60% to 70%
Dementia Paralytica (G.P.I.)	"	+	+ 5-100 Lymph	+ 0.05-0.1	"	(Paretic Curve) 5555443200	+ve 90%
Meningo Vascular Syphilis { Acute . Chronic }	"	Normal or Slight +	+ 50-500 Mixed	+ 0.05-0.1	"	5842210000 or 1233421000	+v 70% to 80%
	"	Normal	10-70 Lymph	+ ? 0.03-0.06	"	Variable, e.g. 0234210000	+ve 65%
Cerebral Abscess	"	Normal or Slight +	+ Mixed	+ ? 0.03-0.06	Normal or Slightly -	Normal	-ve
Cerebral Tumour	"	+	Normal	+ 0.02 - 1.0	Normal	Normal	-ve Unless Syphilitic
Spinal blockage (From a Syndrome)	Clear Yel lowish, Clots on Standing	Normal or - be low block	Normal or Slight +	+ + + 0.03 - 4.0	"	Variable	-ve Unless Syphilitic

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